Past

Present

Future?

Boston Worcester Air Line Trail

A Route 9 Corridor Multi-use Path

Concept Plan Version 2

Revision 0.1	September 2012	Initial draft by Don Burn
Revision 0.2	March 2013	Minor corrections by Don Burn
Revision 0.3	January 2014	Corrections from CMRPC field trips and reports plus further exploration by Don Burn, significant changes to routing in Sections 1.1, 3.6, 4.1 and 4.3 plus changed to 1/100 mile measurements. Also addition of Trail Communities and Trail Construction all work by Don Burn
Revision 0.4	February 2014	Corrections provided by Bruce Tretter, Ed Kross, Howard Drake, Bob Mihalek and Karin Valentine Goins,
Revision 0.5	May 2014	Significant edits by Bruce Tretter, added mile points to the maps, and updated the easement lists
Revision 1.0	June 2014	Completed report. New versions may come from trail relocations.
Revision 1.1	August 2016	Draft version 2 report
Revision 1.2	November 2016	Almost complete draft version 2 report
Revision 1.3	December 2016	A number of corrections and edits provided by Bruce Tretter and Ellen Gugel. Completion of all maps for the project.

Table of Contents

Introduction 4
History 8
Trail Communities 12
Definition of Terms 20
Explanation of Trail Sections 22
Section 1.1 – Quinsigamond Avenue to Oak Street 26
Section 1.2 – Oak Street to Lake Street 28
Section 1.3 - Lake Street to Fruit Street 30
Section 1.4 - Fruit Street to Northborough Line 32
Section 2.1 - Shrewsbury Line to Westborough Line 34
Section 3.1 - Northborough Line to Sassacus Drive 36
Section 3.2 – Sassacus Drive to Park Street 38
Section 3.3 – Park Street to East Main Street 40
Section 3.4 – East Main Street to Connector Road 42
Section 3.5 – Connector Rd to West Park Drive 44
Section 3.6 - West Park Drive to Southborough Line 46
Section 4.1 - Westborough Line to Parkerville Road 48
Section 4.2 - Parkerville Road to Route 9 50
Section 4.3 - Route 9 to Framingham Line 52
Section 5.1 - Southborough Line to Framingham Center 54
Section A3.1 - Lyman St to Northborough Line 56
Section A2.1 - Northborough Line to Bartlett St 58
Section A2.2 - Bartlett St to Rice St 60
Section A2.3 - Rice St to Berlin Line 62
Section A6.1 - Berlin Line to Mass Central Rail Trail 64
Section S4.1 - White Bagley Rd to Marlborough 66
Section S7.1 - White Bagley Rd to Marlborough 68
Trail Construction 70
Boston Worcester Airline Trolley Connections 74
References 76

Introduction

Proposed route of the Boston Worcester Air Line Trail

Commuting to and from outside communities to work became popular in the early 20th century with the advent of the electric trolley railroad until the automobile became the preferred method of travel 30 years later.

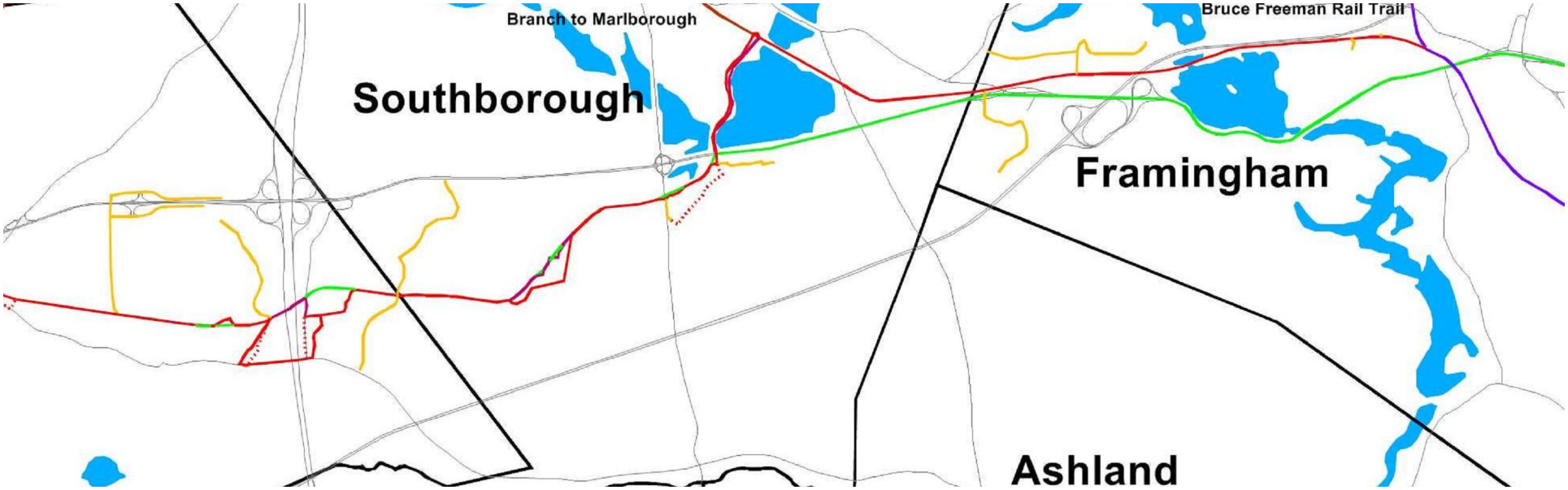
The rapid success of the automobile as a primary mode of transportation spurred the creation of superhighways and elimination of trolley lines. In Central Massachusetts specifically, the Boston Worcester Turnpike (Route 9) replaced the Boston and Worcester Air Line Trolley railroad. Due to increased traffic over the succeeding years, however, as noted in recent studies (CMR2005) (MAP2011), Route 9 has become increasingly congested and steadily more hazardous.

In order to relieve congestion, the most current Route 9 Corridor Analysis by the Metropolitan Area Planning Council suggests that infrastructure improvements should be made to allow for bicycle and pedestrian access along the corridor.

In recent years, the concept of converting former railroad right of ways to multi-use trails has become recognized as a viable method of providing both alternative commuter access and recreational opportunities to the communities they serve. “Multi-use” means that the trail is available for pedestrians, bicyclists and those using a non-motorized means of transportation.

A significant portion of the former Boston and Worcester Air Line Trolley’s private right of way that runs along Route 9 is still intact. It is believed that much of the rail line route extending from about half a mile east of Worcester to White’s Corner in eastern Southborough could be fairly readily converted to a multi-use trail. Further adding bike facilities in the Lakeway District of Shrewsbury could extend the western end of the trail to the bike lanes on the Kenneth Burns Bridge over Lake Quinsigamond to create a link into Worcester. In the same vein, to the east, developing a rail with trail along the CSX branch line would connect from Southborough to the planned Bruce Freeman Trail in Framingham.

This document works to define a commuter alternate transportation network. The backbone of this network is parallel to Route 9. In addition two major branch lines that could be considered trails in their own right are described. One of these branches links Southborough to on road bike facilities in Marlborough. The other branch would connect Westborough, Northborough and Berlin, providing a link to the Mass Central Rail Trail in Berlin. This branch and parts of the main trail could provide an alternate route for the East Coast Greenway, which currently plans a long stretch on highways to get from the Mass Central Rail Trail to Worcester. Finally, a number of spurs leading to offices, businesses, shopping, denser population centers and public transportation hubs are identified in this document.



Considering that some studies (MWR2012) indicate commercial square footage along Route 9 could double at build-out, the need to relieve today's already high traffic congestion on Route 9 is urgent. At the same time, residents in the area have indicated they are in favor of smart growth solutions that would allow for a reduction in car trips.

While commuting is a primary concern, there are also a number of recreational benefits to the trail as it will provide a safe environment for walking recreational cycling, in-line skating and other non-motorized activities. The route will also connect a dozens of restaurants and shopping areas to neighborhoods. In Westborough, the trail will help link three prominent "55 and over" developments.

Of note, creating bike and multi-use trails in Massachusetts has become a lengthy and expensive proposition. Adding the complication of developing a trail through a densely populated area only makes what is proposed in this document more challenging. Nonetheless, the long-term benefits of creating a multi-use trail that serves so many practical purposes far outweigh the associated challenges and costs.

Now is the time to get started.

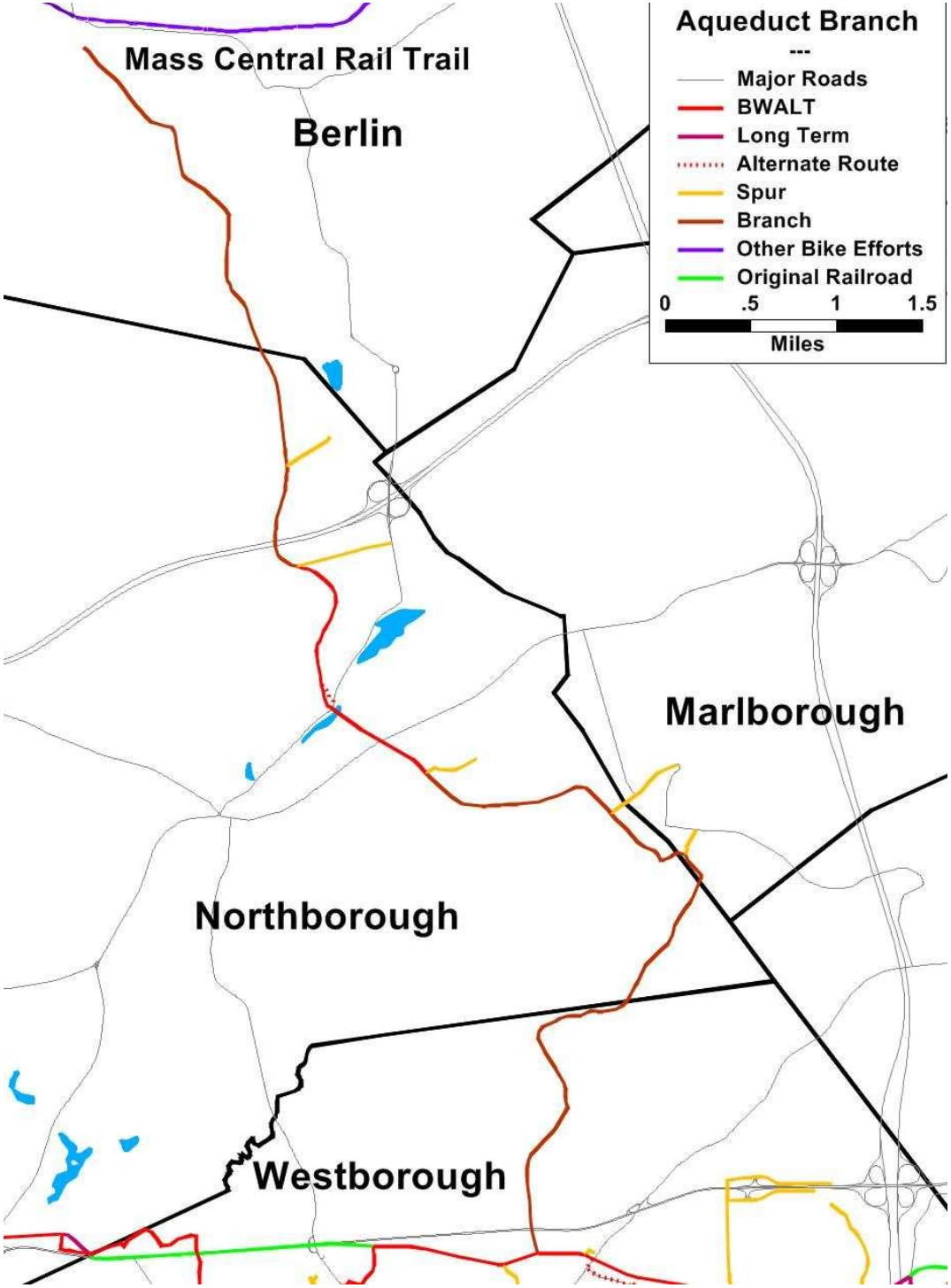
Design Philosophy

Creating a trail in a highly developed area such as the Route 9 corridor poses significant challenges. Given the gaps in the right-of-way due to development and the need to link different rights-of-way, having a clear design philosophy is needed to ensure that the trail is successful. The trail presented in some sections has a long term route which is needed to achieve the design goals, and a short term route to initially establish the trail.

Diversity

While this is envisioned as a commuter trail, it will be the only shared use path in most of the communities, and therefore needs to accommodate a diverse user group. The trail should to the greatest extent possible meet needs of all users, including differing devices, various ages and a range of abilities so everyone benefits, including those with disabilities. Consider the many number of ways a trail can be used, the US-DOT in 2004 [FTA2004] identified most the following uses:

Person – Running, jogging, walking
Bicycle – Regular, Recumbent, Tandem, Tandem Recumbent Electric, Bike Trailers
Tricycle – Regular, Recumbent
Skater – Inline, Skateboard
Baby Stroller – Conventional, Jogging
Kick Scooters – Regular, Motorized



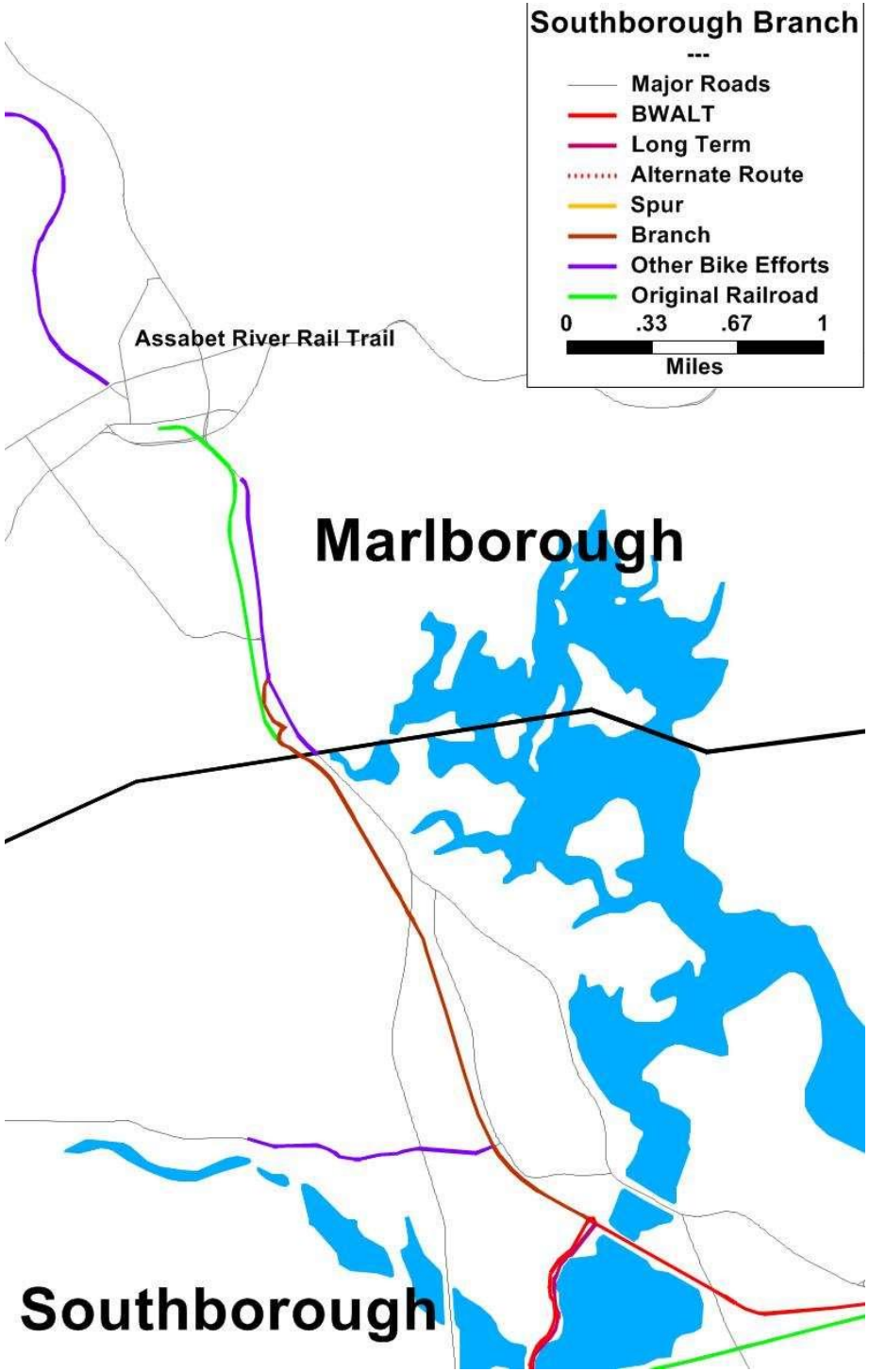
Wheelchairs – Manual, Motorized, Assistive Power Scooters, Racing
Hand Cycle – Standalone, Wheelchair attachment
Segway
Animals – Horses, dog carts

Considering various age groups and user abilities, one can see keeping the trail off roads, with minimal grades, and sufficient width to support the diversity safely needs to be a major requirement.

Safety

Safety is the top concern. With the need to cross a large number of roads, and in places use roads or roadway corridors, significant challenges exist. The hilly terrain in the area creates additional safety (and usability) issues.

Ideally, cars and trucks alongside or crossing a trail should be minimized. Where the trail parallels a roadway, separate bicycle and pedestrian space is preferred unless there are few vehicles and low travel speed. Higher speed and traffic volumes decrease users' perception of safety and tend to discourage less experienced users. Visibility is particularly important at intersections with roads and in natural areas, but design principles for crime prevention should also be applied. Finally, the grades on the trail can significantly impact safety and usability. Grades by ADA standards should be less than 4.5%, and in general grades over 3% for long distances cause fatigue. Given that many inexperienced users may walk their bicycles when they encounter significant grades, providing a wide off-road path in these cases is critical.



Connectivity

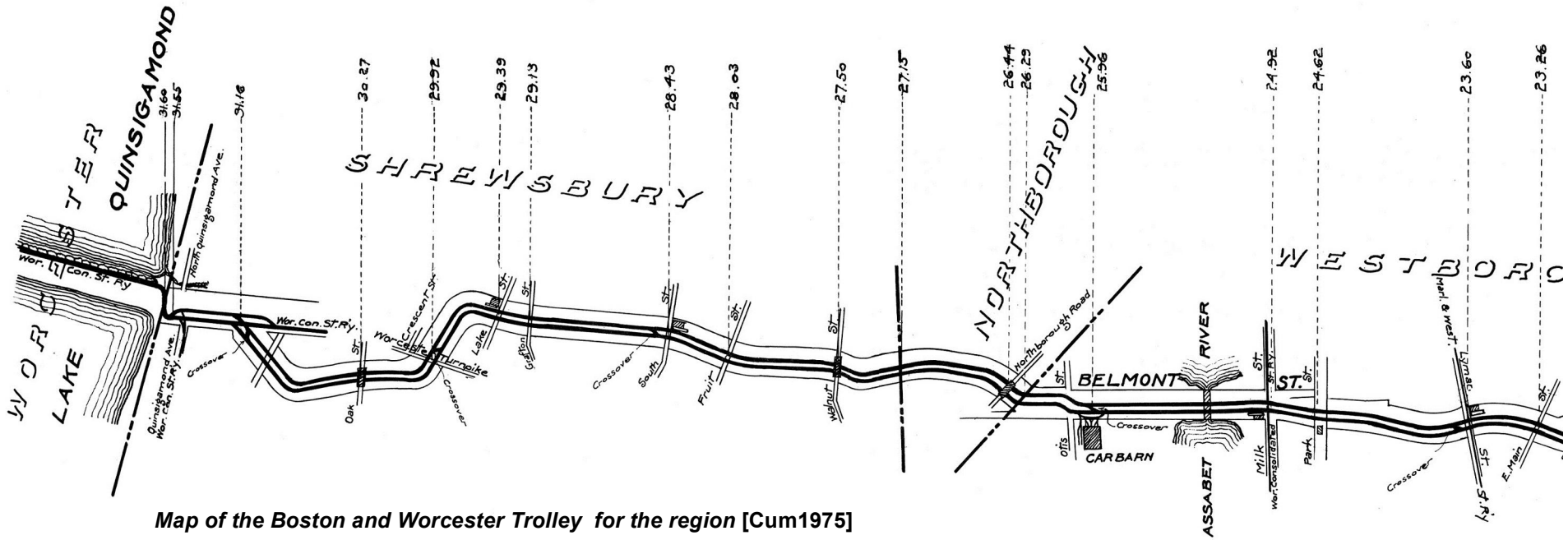
Providing linkage to other trails adds to the desirability of the trail. At present the trail and its branches connect to the Bruce Freeman Trail, the Mass Central Rail Trail, and the bike infrastructure in Worcester. The plan calls for several spurs to connect to businesses, green space and schools, or other municipal facilities., and public transit.

Demonstrability

Although the ultimate goal of this project is to create a paved route for non-motorized activity, there are sections that can be readily converted for non-paved recreational and limited commuting use now. Specific examples include Lake Street in Shrewsbury to Northborough Crossing in Northborough, Park Street to Interstate 495 in Westborough, and Flanders Road in Westborough into Southborough.

In Central Massachusetts, trail organizations have built non-paved trails for as little as $35,000 per mile with the help of the town Departments of Public Works and volunteer efforts. Such an approach would allow individual communities to demonstrate their commitment to an eventual comprehensive trail system linking all communities described in this proposal.

History

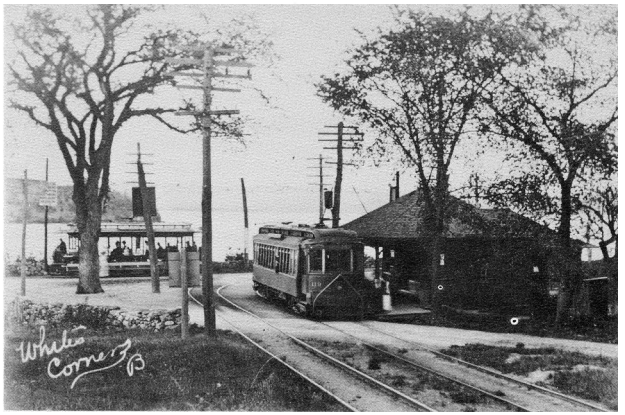


Map of the Boston and Worcester Trolley for the region **[Cum1975]**

At the turn of the century, the Boston and Worcester Turnpike was largely unpaved with severe grades and was avoided by many travelers. The turnpike's biggest advantage was that it offered a straight route between the two cities. Entrepreneurs at the time decided a high speed trolley line following the turnpike would be profitable. When the proposed route was being finalized in 1902, the railroad decided to separate the route from the turnpike at White's Corner as engineers determined that the grades on the highway heading west were excessively steep. [Cum1975].

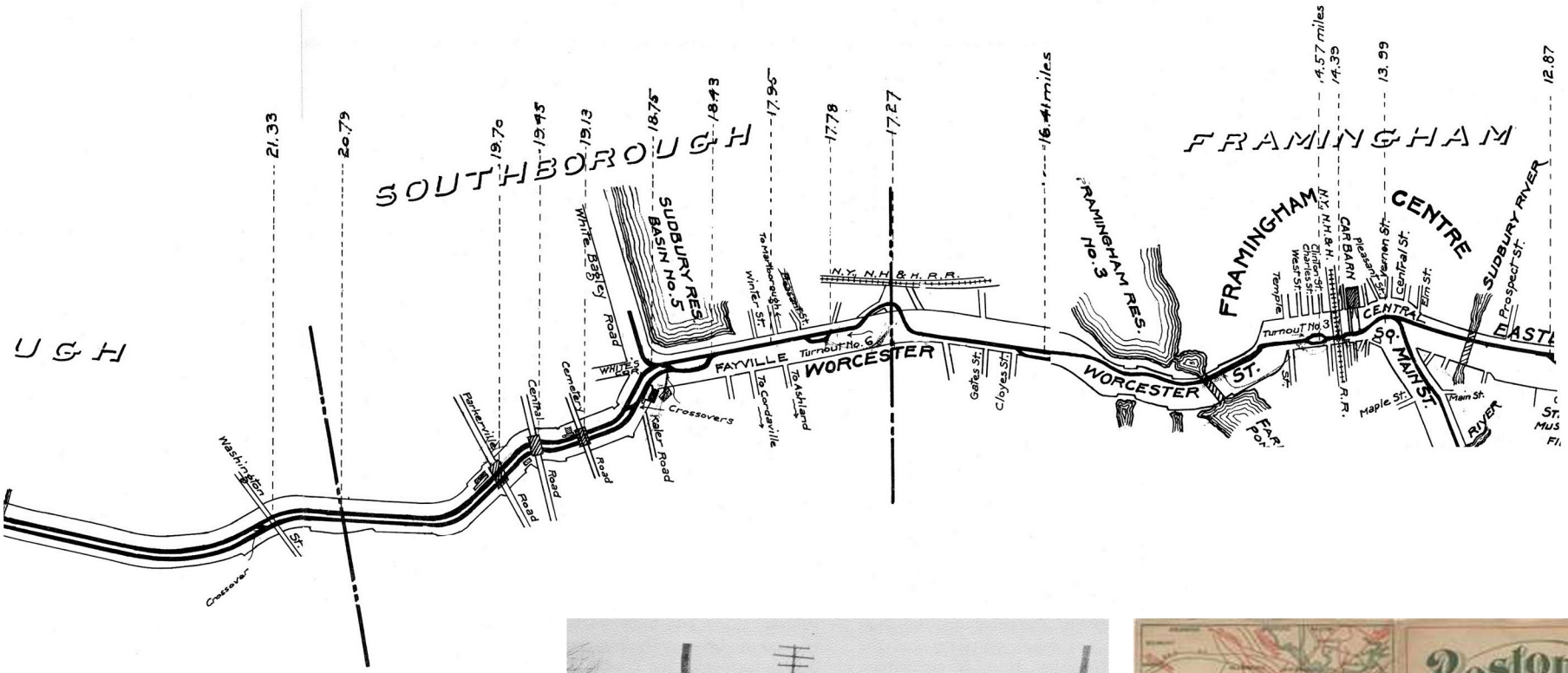
Thanks to the private right of way, the Boston and Worcester Street Railway has been described as "the only Massachusetts electric line to approximate interurban technology"[Hil1960]. Electric interurban railways were different from trolley lines in that they used heavier equipment and had private right of ways similar to steam railroads at the turn of the century. The first *rail trail* in the United States was a conversion of an electric interurban right of way into the *Illinois Prairie Path*.

Oak Street Shrewsbury [Cum1975]



White's Corner, Southborough [Cum1975]

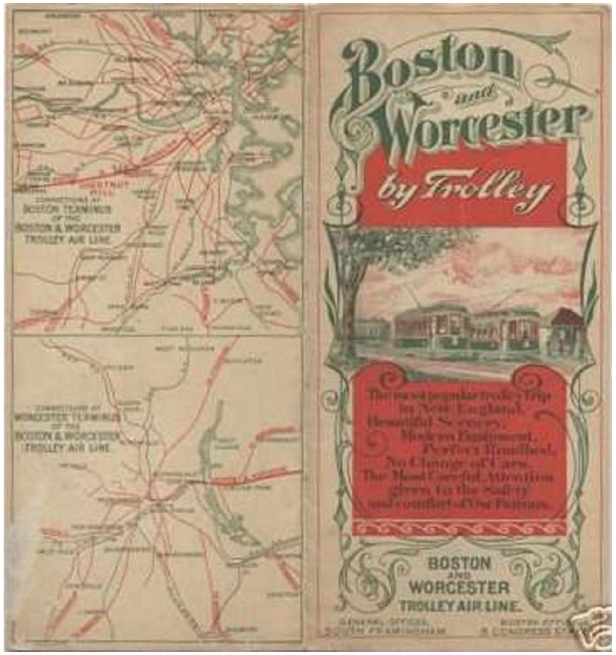
From its opening in 1903 till its demise in 1931, the railway operated heavy wooden passenger equipment. In addition the railroad had a busy package delivery service until 1928.



In 1913, a trip from Boston to Worcester took 2 hours and 20 minutes and cost 64 cents. The railway ran limited trains which stopped only at Lyman Street in Westborough. The trolley was popular for excursions; by changing lines, people could travel to New London, Connecticut, or Hampton Beach in New Hampshire, a total of almost two hundred miles in a day.

Starting in 1918, the railway had financial difficulties most years of operation and by 1931 the trolley line section from Framingham to Worcester was abandoned in favor of bus service along Route 9.

Private Right of Way in Southborough or Westborough [Cum1975]



Agricultural Branch Railroad

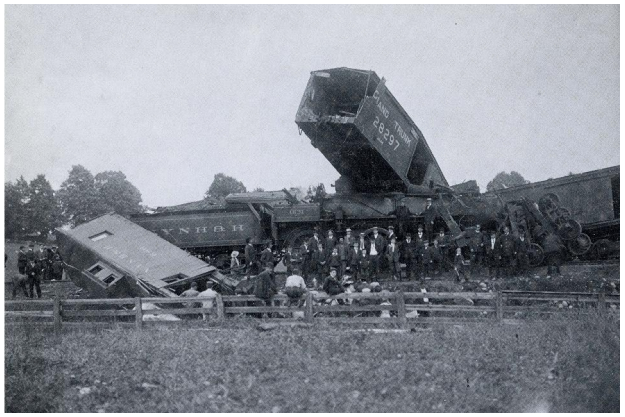
Long before the trolley the Agricultural Branch Railroad incorporated by the Legislature of Massachusetts on April 26, 1847 to provide a rail connection between Framingham and Northborough through the town of Southborough and a small portion of the city of Marlborough. Service began on December 1, 1855.

A 1.5-mile branch off the 13.2-mile main line from Marlborough Junction into Marlborough was added in June 1855. In July 1866, the railroad opened a 14-mile extension from Northborough to Pratts Junction in Sterling via the towns of Berlin, Boylston, Lancaster, and Clinton, bringing the entire line up to 28.7 miles of track

For much of the time that the railroad ran passenger service the line was double track from Framingham to Marlborough Junction. With as many as twelve trains a day on the line. The railroad discontinued passenger service west of Marlborough in 1931 and completely in 1937. The spur into Marlborough was abandoned in 1966, unfortunately the right of way has been built over since then.

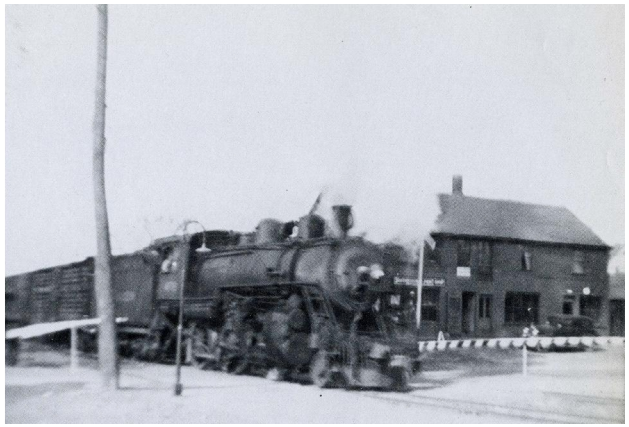
Starting in 1898, the tracks Pratt's Junction and Sterling Junction primarily served a cider mill in the center of Sterling; however, trains only accessed the mill from Pratt's Junction and thus the tracks from Sterling Center to Sterling Junction were torn up. Today, this section of track bed forms a portion of the Central Mass Rail Trail despite not being a part of the former Central Massachusetts Railroad, which composes much of the rest of this rail trail network.

Framingham Center Railroad station



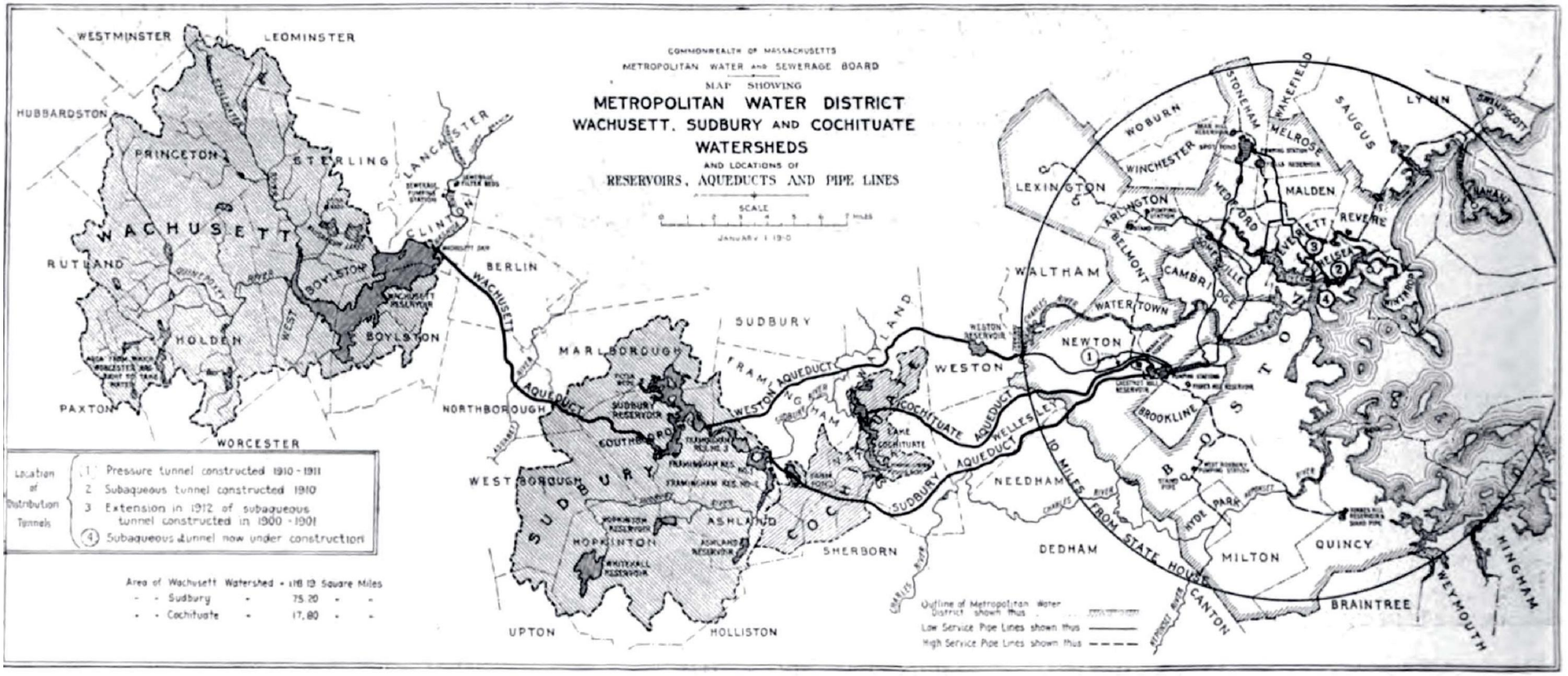
Wreck near the Framingham / Southborough town line

Fayville Railroad station



Southborough Main Street Crossing

Marlborough Railroad Station on left



Map of the aqueduct system

Waschusett Aqueduct

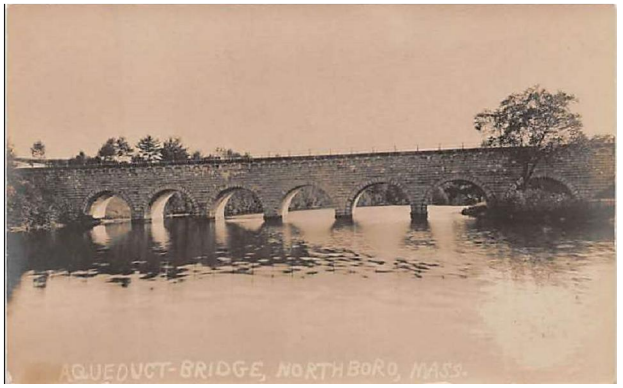
In 1897, the Nashua River above the town of Clinton was impounded by the Wachusett Dam. Six and 1/2 square miles were flooded in the towns of Boylston, West Boylston, Clinton and Sterling. and its water conveyed by the Wachusett/Weston Aqueduct to Weston Reservoir and then by pipeline to the Chestnut Hill and Spot Pond Reservoirs. Work was completed in 1905 and the reservoir first filled in May 1908.

The Wachusett system was built to service the 29 municipalities within the 10 mile radius of the State House. At the time, the Wachusett Reservoir was the largest public water supply reservoir in the world.

This 9-mile (14 km) long water system consists of 2 miles (3 km) of hard rock tunnel and 7 miles (11 km) of 11-foot (3.4 m) high horseshoe-shaped underground aqueduct constructed of non-reinforced concrete with a brick-lined invert. It is not constructed entirely underground and there are several elevated sections.

Until the 1960s, the Wachusett Aqueduct was the main conduit used to deliver water for Boston. At that time, it carried 300 million US gallons (1,100,000 m3) of water each day (13 m3/s). The Cosgrove Tunnel replaced it in 1965 as the primary water transmission aqueduct.

The aqueduct's route and supporting structures were added to the National Register of Historic Places in 1990.



Early photo of the aqueduct in Northborough

Trail Communities

The BWALT trail is conceived as an alternate transportation network in the busy Route 9 corridor. This part of the plan looks at the communities served by the trail and identifies many of the capabilities the trail would bring to the region. The goal here is to provide a context for some of the design decisions shown in the rest of the plan, and to explain the many facets that make this trail desirable to be built soon.

A good insight into the corridor is provided in the introduction to the Route 9 Corridor Analysis [MAP2011].

"For the majority of the study area, Route 9 is a divided four-lane highway with additional turning lanes at most signalized intersections. In addition to being a corridor that is home to a significant number of high-tech businesses, there are various types of commercial activity ranging from local shops to national retail chains. The Route 9 corridor is also a home to residents in multi-family and single-family homes.

Route 9 is under tremendous development pressure. Increasing traffic volumes, congestion and conflicts are forecast. It is critical that infrastructure decisions be made in the near future to balance development and traffic demands since the economic health and quality of life of this area is dependent on the proper functioning of Route 9."

We believe that the BWALT trail can have a significantly positive influence on achieving such a balance, especially in light of the potential 61% increase in commercial building space [MAP2013]. The four maps in this part of the plan show the trail and spurs with respect to current conditions:

- Current major traffic sources and targets
- The trail with respect to economic and ethnic diversity
- Existing land use along the trail
- Current zoning in the trail corridor

The trail links five of the areas identified in the MAPC Route 9 Metro West Smart Growth Plan [MAP2013] where better infrastructure, including bike and pedestrian access, are needed. It could offload some of the projected 95% increase in overall traffic at buildout in the western three towns in the corridor, including providing some alternate to the 208% increase projected in Shrewsbury. [CMR2010]. Also, in the Interstate 495 & Route 9 Interchange Improvement Study [MAD2012, MassDOT recommended that the BWALT trail be evaluated to reduce congestion in that area.

The corridor represents a strong retail, commercial and industrial mix with housing. The trail is planned to link these components together while staying off the busy roadway. Some of the benefits of these linkages are discussed below.

Benefits to businesses. Employees may be able to commute to work, exercise, run errands, or buy lunch along the trail without a car trip. There are a large number of office buildings and dining establishments and other retail in the immediate area of the trail. Many businesses are looking to attract millennials by moving to urban core areas, driven by younger adults desire to not need a car for commuting. The bike trail can be a component of an effort to attract these workers and the companies that employ them to our region.

Benefits to low income, minority, and senior communities. Significant town funded and Chapter 40B housing along this route, in addition to large apartment complexes, residential hotels, and over-55 and retirement housing.
This trail would provide car-free access to shopping and employment in the corridor. Children would also potentially have a *Safe Routes to School* available to several schools within the communities. The Westborough MBTA station, accessible via a spur off the trail, would broaden access to employment and recreational opportunities. Higher education, such as Framingham State University and UMass Medical School, is also directly accessible via the trail.

Benefits to residential real estate values. Numberous of studies have shown that rail trails improve residential property values. In addition, studies of over-55 developments place trails as one of the most sought after amenities.

While multi-use trails are often considered a destination, one of the strengths of the trail in this plan is that it links a number of locations that people commonly travel to with the rest of the corridor.

Overall we believe this is a trail that will significantly serve its communities and the Commonwealth.

Commuting Patterns

The tables that follow show the commuting patterns for both outbound and inbound commuters from each town directly impacted by BWALT. The data came from the US Census Bureau Commuting Worker Flow [USC2013].

The second column represents the *Other Travel Mode category* that includes: Taxicab, Worked at home, Bicycle, Walked, Motorcycle, Other method. While not explicitly indicating a possible trail user, it is the best indicator from the data.

The information is broken into three tables per town, general information, outbound commuter data, and inbound commuter data. Some notes on the information, the *Commuter Population* entry represents the delta of Inbound versus Outbound commuters, with a negative number showing a decrease in population during working hours.

Overall the data shows a significant number of commuters in the BWALT area traveling to other towns on the trail.

Berlin

Population	2978	
Work in town	364	163
Commuter Population	-721	-8

Outbound Commuters

Total	**896**	**22**
Public Transportation	8	
Framingham	13	0
Marlborough	231	10
Northborough	53	0
Shrewsbury	0	0
Southborough	44	0
Westborough	44	0
Worcester	85	0
BWALT Total	**470**	**10**

Inbound Commuters

Total	**175**	**0**
Public Transportation	0	
Framingham	0	0
Marlborough	63	0
Northborough	27	0
Shrewsbury	85	0
Southborough	0	0
Westborough	0	0
Worcester	0	0
BWALT Total	**175**	**0**

Framingham

Population	70746	
Work in town	11170	2452
Commuter Population	10748	190

Outbound Commuters

Total	**23735**	**642**
Public Transportation	4537	
Berlin	0	0
Marlborough	703	0
Northborough	158	0
Shrewsbury	79	9
Southborough	314	0
Westborough	520	0
Worcester	561	0
BWALT Total	**2335**	**9**

Inbound Commuters

Total	**34483**	**832**
Public Transportation	312	
Berlin	13	0
Marlborough	1694	32
Northborough	520	0
Shrewsbury	832	11
Southborough	664	0
Westborough	607	0
Worcester	1523	19
BWALT Total	**5853**	**63**

Marlborough

Population	39612	
Work in town	6789	1148
Commuter Population	7516	132

Outbound Commuters

Total	13390	202
Public Transportation	268	
Berlin	63	0
Framingham	1694	32
Northborough	285	0
Shrewsbury	194	0
Southborough	547	16
Westborough	512	0
Worcester	684	0
BWALT Total	**3979**	**48**

Inbound Commuters

Total	**20906**	**334**
Public Transportation	205	
Berlin	231	10
Framingham	703	0
Northborough	587	0
Shrewsbury	1095	0
Southborough	228	0
Westborough	500	0
Worcester	2235	25
BWALT Total	**5579**	**35**

Northborough

Population	14834	
Work in town	1297	664
Commuter Population	328	42

Outbound Commuters

Total	**4082**	**37**
Public Transportation	184	
Berlin	27	0
Framingham	520	0
Marlborough	587	0
Shrewsbury	141	0
Southborough	115	0
Westborough	412	15
Worcester	746	0
BWALT Total	**2548**	**15**

Inbound Commuters

Total	**4410**	**79**
Public Transportation	0	
Berlin	53	0
Framingham	158	0
Marlborough	285	0
Shrewsbury	482	0
Southborough	66	0
Westborough	167	29
Worcester	1117	25
BWALT Total	**2043**	**54**

Shrewsbury

Population	36580	
Work in town	3157	1050
Commuter Population	-4547	-488

Outbound Commuters

Total	**13127**	**567**
Public Transportation	224	
Berlin	85	0
Framingham	832	11
Marlborough	1095	0
Northborough	482	0
Southborough	415	0
Westborough	1456	11
Worcester	3963	114
BWALT Total	**8328**	**136**

Inbound Commuters

Total	**8580**	**79**
Public Transportation	56	
Berlin	0	0
Framingham	79	9
Marlborough	141	0
Northborough	194	0
Southborough	32	0
Westborough	190	15
Worcester	2857	51
BWALT Total	**3493**	**66**

Southborough

Population	9943	
Work in town	882	483
Commuter Population	1933	132

Outbound Commuters

Total	**3430**	**0**
Public Transportation	6	
Berlin	0	0
Framingham	664	0
Marlborough	228	0
Northborough	66	0
Shrewsbury	32	0
Westborough	220	0
Worcester	273	0
BWALT Total	**1483**	**0**

Inbound Commuters

Total	**5363**	**132**
Public Transportation	0	
Berlin	44	0
Framingham	314	0
Marlborough	547	16
Northborough	115	0
Shrewsbury	415	0
Westborough	305	0
Worcester	604	113
BWALT Total	**2344**	**129**

Westborough

Population	18756	
Work in town	2982	938
Commuter Population	10232	158

Outbound Commuters

Total	**5371**	**44**
Public Transportation	275	
Berlin	0	0
Framingham	607	0
Marlborough	500	0
Northborough	167	29
Shrewsbury	190	15
Southborough	305	0
Worcester	664	0
BWALT Total	**2433**	**44**

Inbound Commuters

Total	**15603**	**202**
Public Transportation	27	
Berlin	44	0
Framingham	520	0
Marlborough	512	0
Northborough	412	15
Shrewsbury	1456	11
Southborough	220	0
Worcester	2322	74
BWALT Total	**5486**	**100**

Worcester

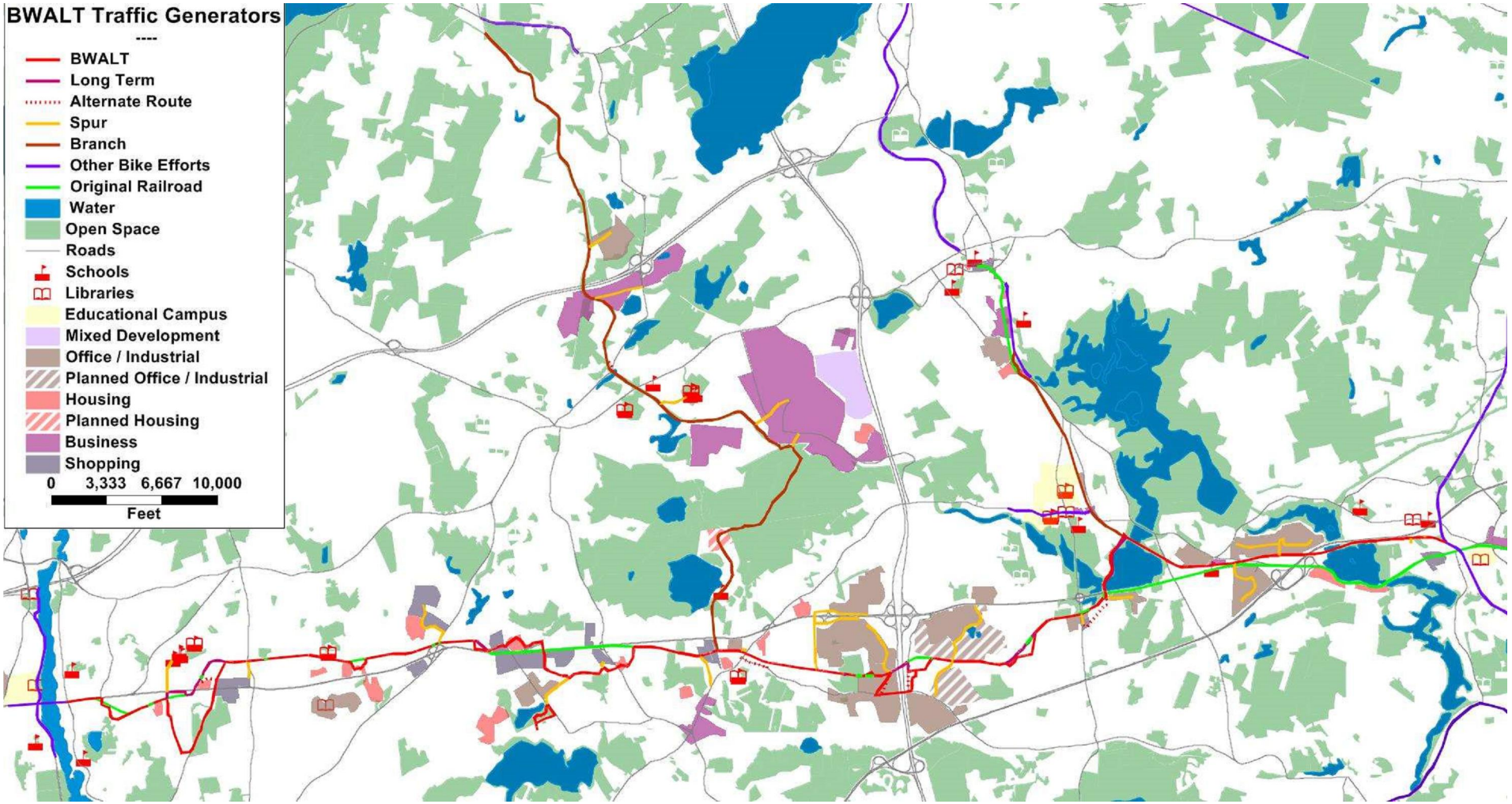
Population	183016	
Work in town	45678	7766
Commuter Population	19658	

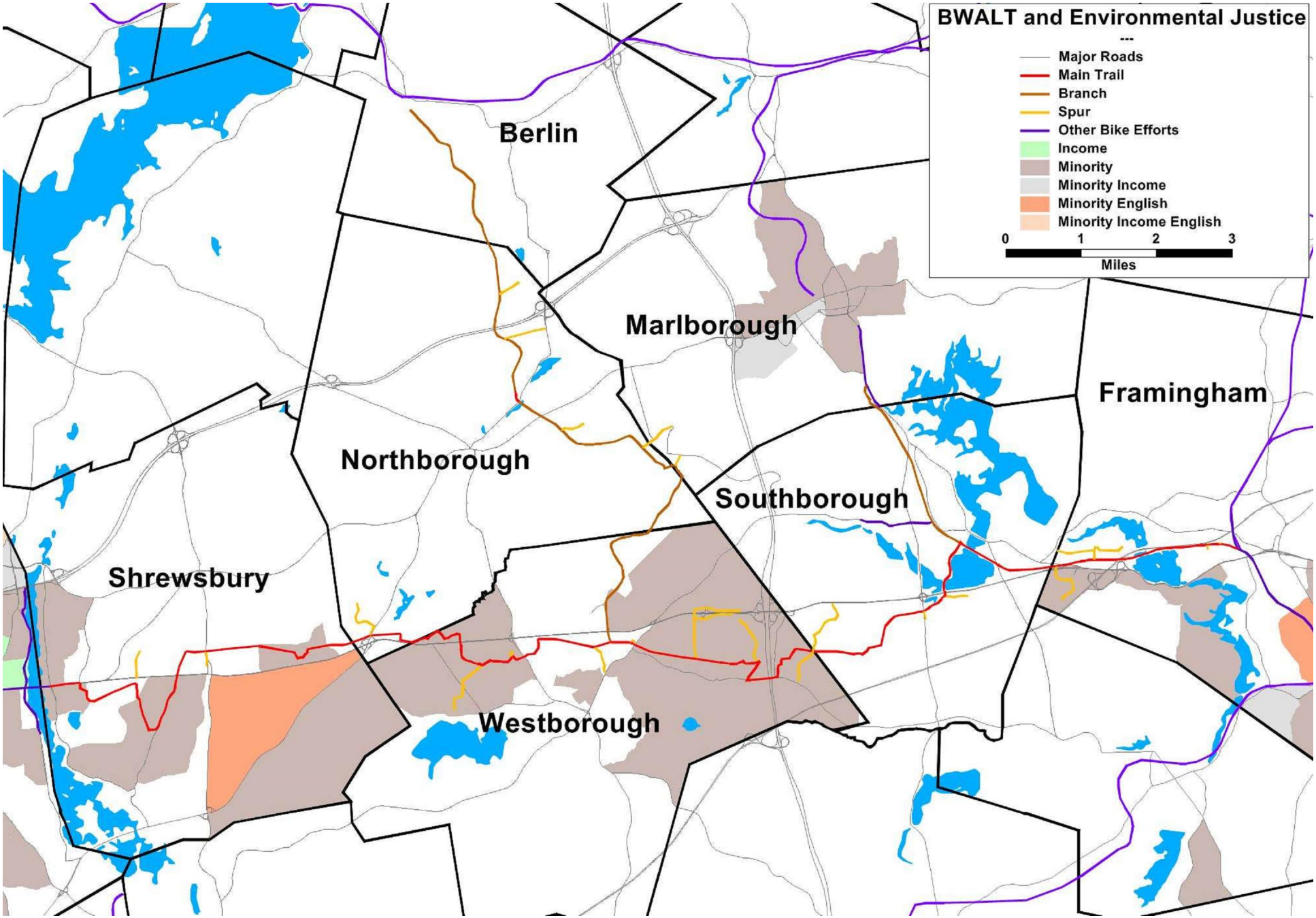
Outbound Commuters

Total	**34130**	**1671**
Public Transportation	3207	
Berlin	0	0
Framingham	1523	19
Marlborough	2235	25
Northborough	1117	25
Shrewsbury	2857	51
Southborough	604	113
Westborough	2322	74
BWALT Total	**10658**	**307**

Inbound Commuters

Total	**53788**	**608**
Public Transportation	276	
Berlin	85	0
Framingham	561	0
Marlborough	684	0
Northborough	746	0
Shrewsbury	3963	114
Southborough	273	0
Westborough	664	0
BWALT Total	**6976**	**114**


BWALT Traffic Generators
BWALT
Long Term
Alternate Route
Spur
Branch
Other Bike Efforts
Original Railroad
Water
Open Space
Roads
Schools
Libraries
Educational Campus
Mixed Development
Office / Industrial
Planned Office / Industrial
Housing
Planned Housing
Business
Shopping
0 3,333 6,667 10,000
Feet


BWALT and Environmental Justice
Major Roads
Main Trail
Branch
Spur
Other Bike Efforts
Income
Minority
Minority Income
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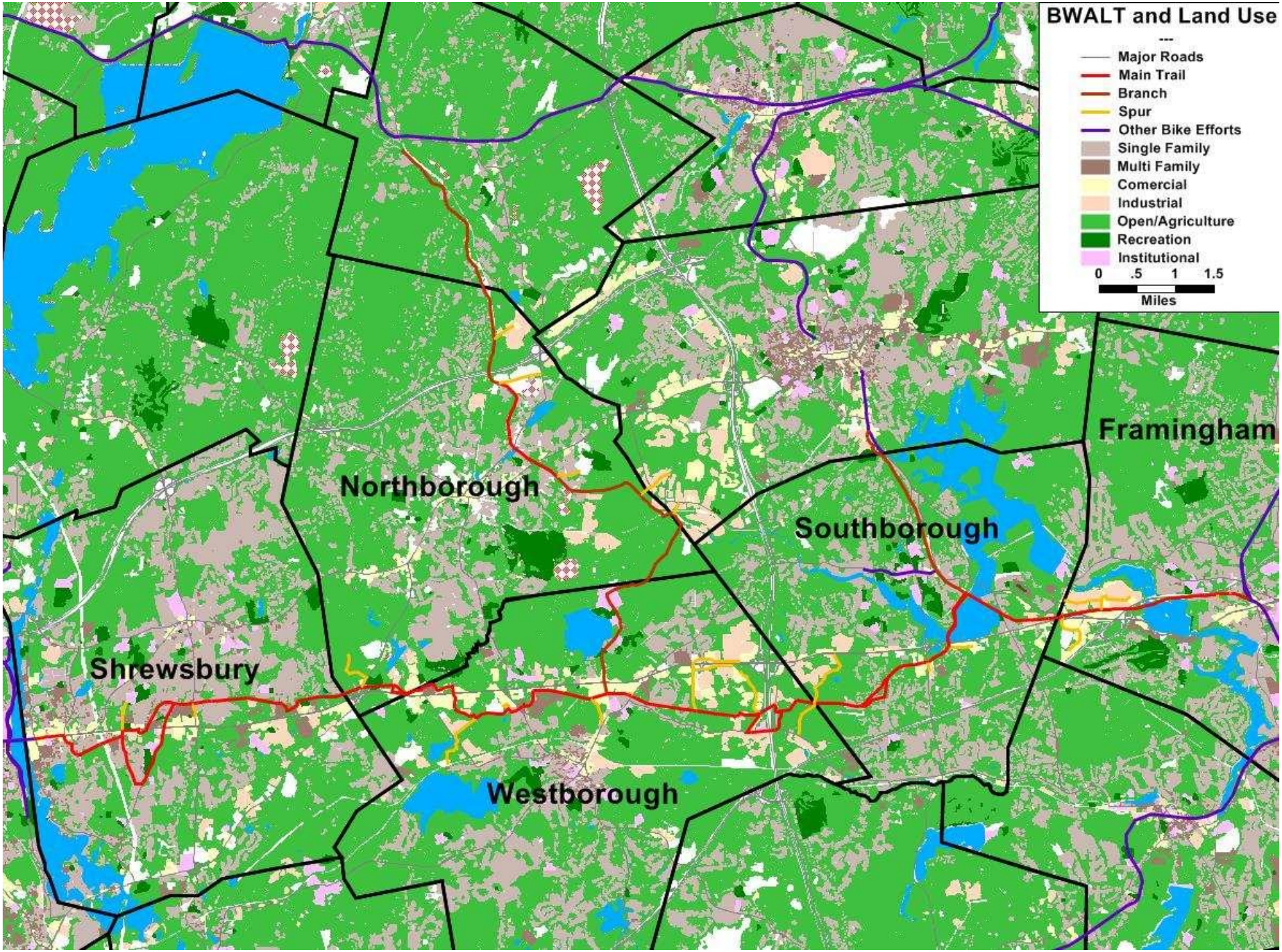
BWALT and Land Use
Major Roads
Main Trail
Branch
Spur
Other Bike Efforts
Single Family
Multi Family
Comercial
Industrial
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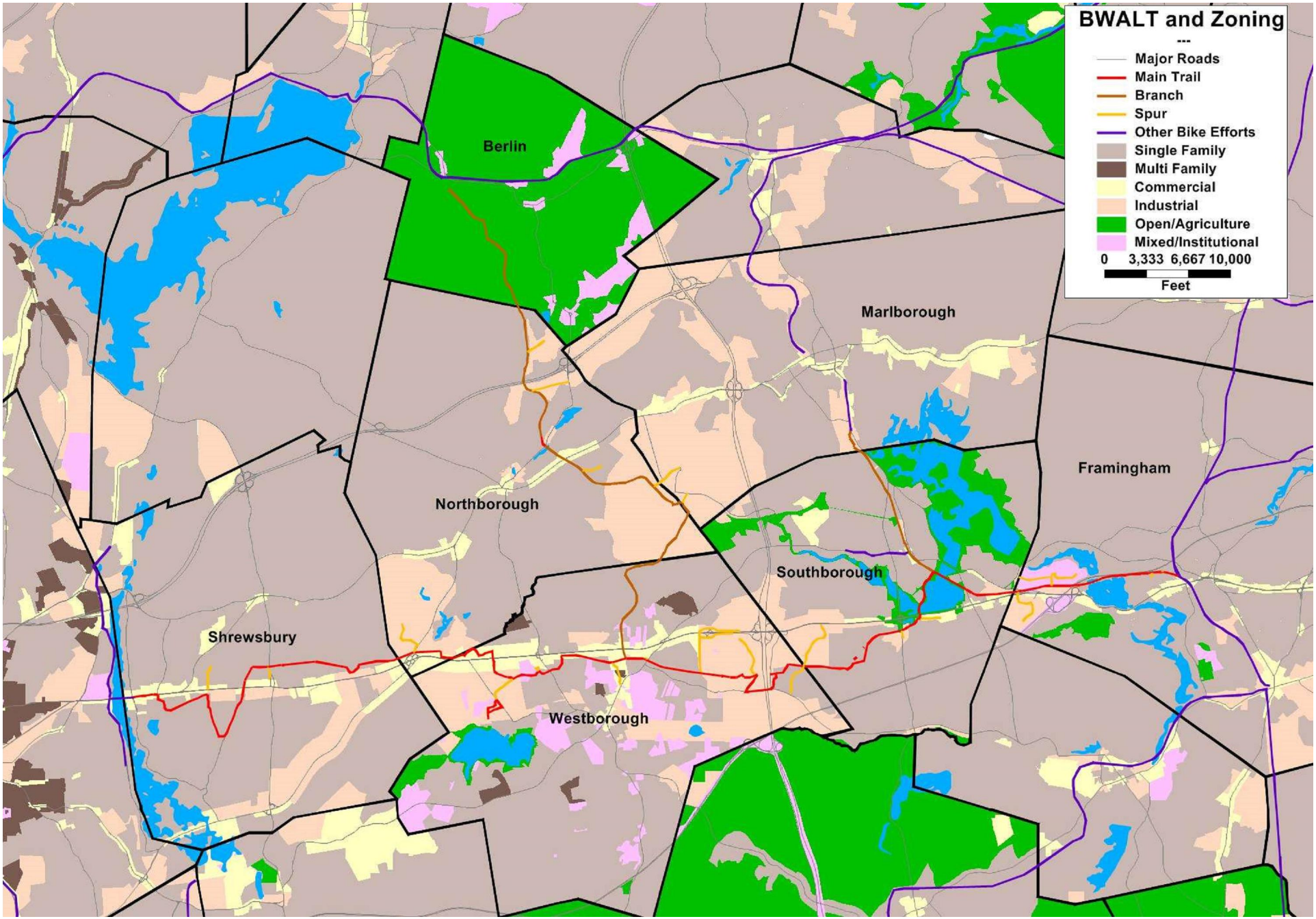
BWALT and Zoning
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Northborough
Southborough
Shrewsbury
Westborough

Definition of Terms

Bicycle facilities have their own unique terms for many things. This section provides a brief overview of some of these terms for the reader.

On-Road Approaches

This section draws heavily on the NACTO Urban Bikeway Design Guide [NAC2011] for data.

Separated Bike Lane

Separated Bike Lanes, also known a cycle tracks run along but are separate lanes only for bicycles that are segregated from vehicular and pedestrian sidewalk traffic.

An example Separate Bike Lane [NAC2011]

Separated Bike Lanes may be one-way or two-way, and may be at street level, at sidewalk level, or at an intermediate level. If at side-walk level, a curb or median separates them from motor traffic, while different pavement color/texture separates the lane from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking, or bollards.

Bike Lane

Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage.

Bike lane on Huntington Ave, Boston [NAC2011]

Shared Lane

Shared lanes have road markings that indicate a shared lane environment for cars and bicycles and are typically located in areas too narrow to accommodate a designated bike lane.

Shared Lane on Huntington Ave, Boston

Bike Trail Terms

Paved Trails

Paved trails are usually surfaced with either asphalt or concrete. In Massachusetts, It should be noted that in Massachusetts, MassDOT holds paved trails to the same high construction standards as those required for single lane motorized road construction.

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Paved Surface on Assabet River Rail Trail

Unpaved Trails

Unpaved trails are usually surfaced with dirt, stone dust, or crusher fines and are less expensive to develop than paved trails. In Massachusetts, Wachusett Greenways has constructed unpaved stone dust surfaced trails at a cost of approximately $70,000/mile versus an estimated $1.5 million they would have had to pay to construct a paved trail. Of note, though, unpaved trails, by their nature, require a higher maintenance cost than do paved trails.

Stone Dust Trail Wachusett Greenways

Tunnels

What people refer to as tunnels on most Massachusetts bike trails are actually culverts under a road or railroad.

Mass Central Rail Trail tunnel in Rutland, MA

Rails with Trails

Multi-use trails can be built in a corridor with an active railroad. Two studies [FTA2002] [RTC2013a] found these trails can be safe and effective. MassDOT requires a separation of 11 to 25 feet between the trail edge facing the adjacent train rail, though that distance can be shorter, as shown in the photo below, where trail speed is slow and train traffic is moderate.

A trail with active railroad

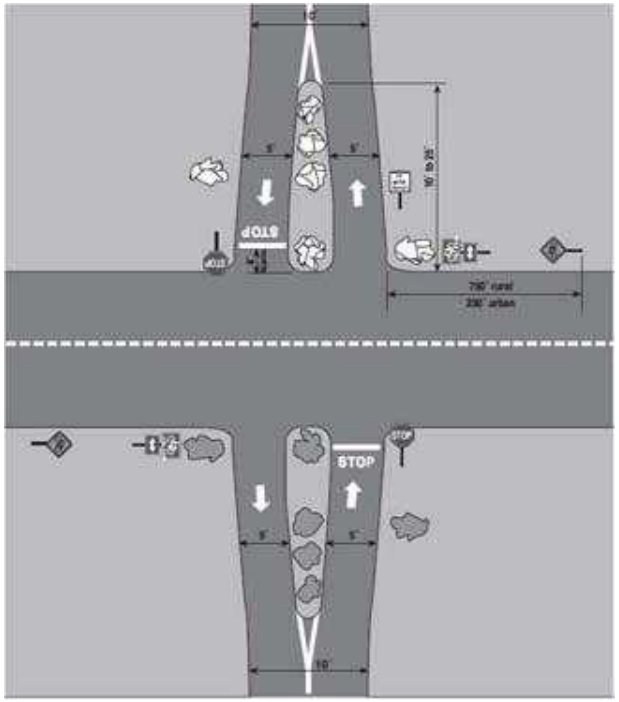
Trails on Rail

"Trails on rails" is a variant of "rails with trails" where rail traffic is particularly low in volume and the trail actually runs for short stretches directly on the rail bed. There are currently no "trails on rails" locations in Massachusetts.

Trail on Rail

Road and Trail Intersections

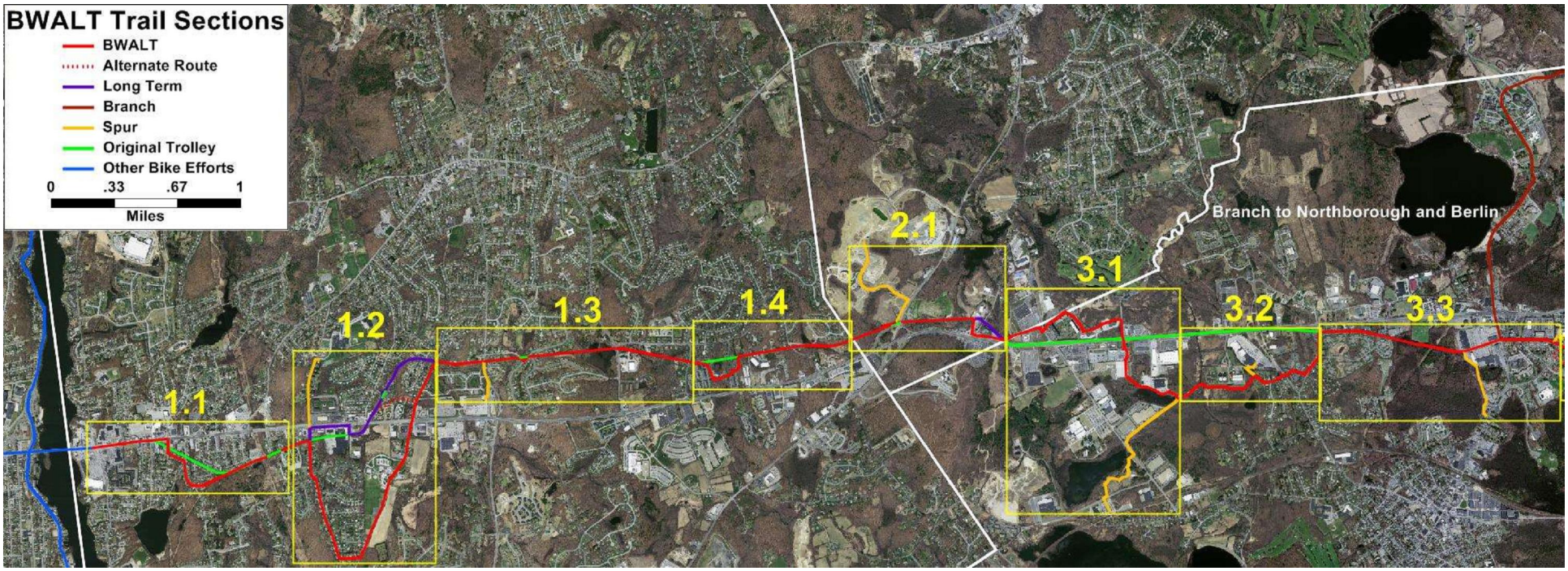
The proposed BWALT trail will have a large number of intersections with roads. Careful design will be needed to construct safe intersections that protect the trail and its users and particularly discourage motorized vehicular access. The recommended approach utilizes islands as shown below.



Recommended road trail intersection design

While many documents have recommended the use of bollards to create a barrier at intersections between trail users and motorized traffic, opinions have changed recently due to the number of serious or fatal accidents involving cyclist collisions with bollards. .

Explanation of Trail Sections—Main Trail



The BWALT trail is organized in this document from west to east with each town on the route assigned a number as follows:

1	**Shrewsbury**
2	**Northborough**
3	**Westborough**
4	**Southborough**
5	**Framingham**
6	**Berlin (branch only)**
7	**Marlborough (branch only)**

Towns are then divided into sections of various lengths based on logical geographic breaks or town lines and are labeled with decimal numbers (e.g., 1.1, 1.2, etc.).

Specific locations and easements are listed for each section. If the item is part of the Long Term route the identifier has an L prepended. If the item is for a Spur an X is prepended. Finally if the easement is already acquired the table entry is green.

The following text provides an overview of the trail by sections.

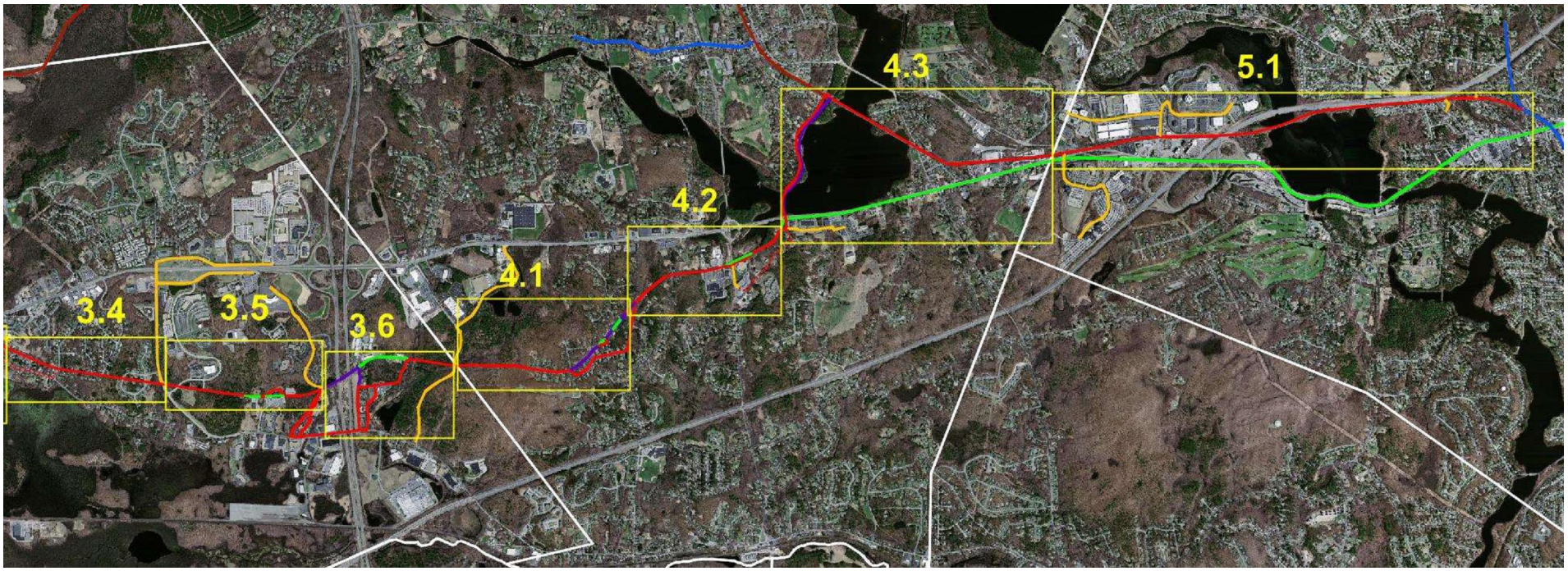
Section 1.1 – From Quinsigamond Avenue to Oak Street along Route 9, then the old right of way. This section will consist of bike lanes on either side of the street, perhaps protected by flexible bollards.

Section 1.2 – From Oak Street to Lake Street. The initial route is all on roads, long term a more complex route would make the trail shorter and safer.

Section 1.3 – From Lake Street to Fruit Street. This is a section that would make a good starting point for Shrewsbury. It requires only one easement. The rest of the trail is on town property and will require minimal grading work.

Section 1.4 – From Fruit Street to the Northborough Line. While not as easy to complete as the previous section because it requires four easements, grading and trail construction, this section, combined with 1.3 and half of 2.1 would make a good preliminary stand-alone trail.

Section 2.1 – This section is the trail through Northborough. With two easements to reach Route 20 this is a logical section to attack early if Shrewsbury is working on its piece. From Route 20 east the route mainly uses existing pavement, but working with MassDOT and other landowners for access will be the challenge.



Section 3.1 – From the Northborough Line to Sasacuss Drive in Westborough. This section, like section 1.2, will require expensive construction and a number of easements. The final route through this and the following section still needs to be determined.

Section 3.2 – From Sasacuss Drive to Park Street. This section will require significant new trail construction as it will run parallel and adjacent to, not along, the old trolley right of way now occupied by Route 9.

Section 3.3 – From Park Street to East Main Street. This section will be relatively easy to build with only one easement left to and the former right of way in good condition.

Section 3.4 – From East Main Street to Connector Road. Like the previous section, the former right of way is in good condition. The challenge here will be acquiring the five easements, two of which are close to houses.

Section 3.5– From Connector Road to West Park Drive. While the right of way has been breached in one place, overall construction should not be too hard, and again three easements are needed.

Section 3.6– From West Park Drive to the Southborough Line. Although a tunnel under Interstate 495 would be necessary in the future to make the trail as safe and efficient as possible, a bypass running on existing roads and paved surfaces with significant grades is currently proposed.

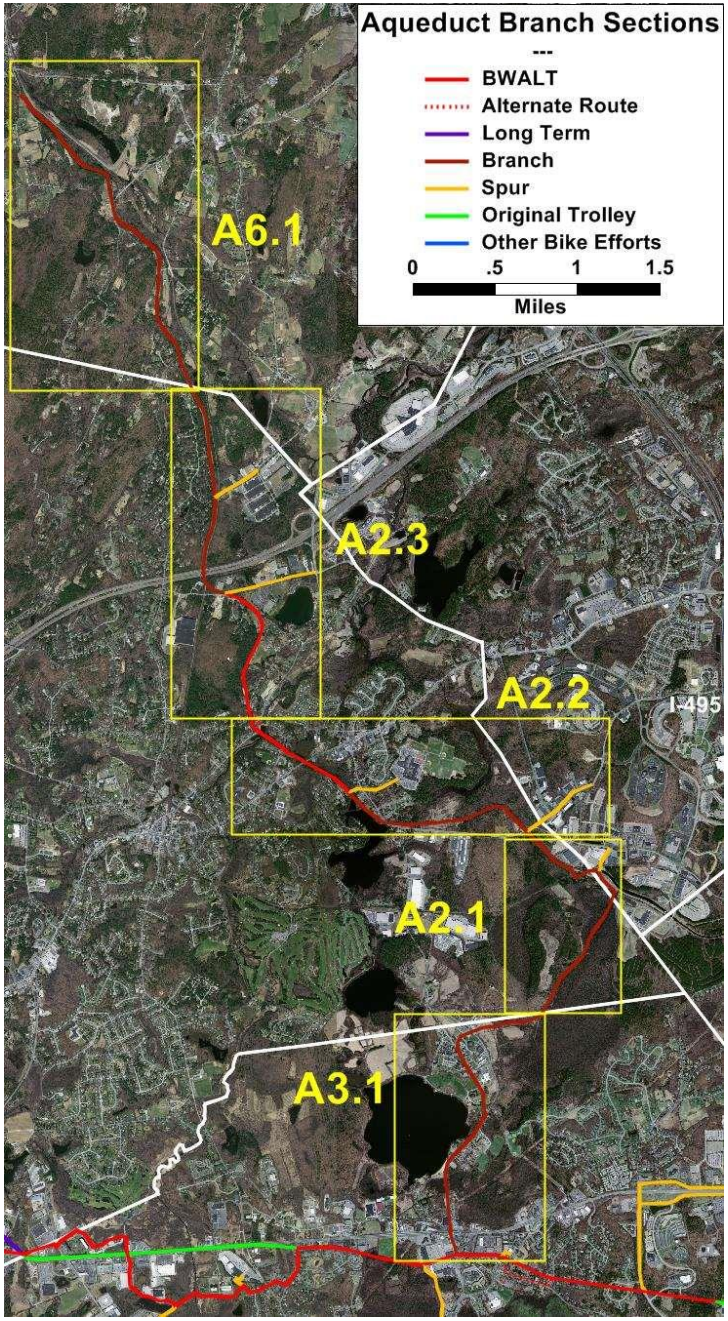
Section 4.1 – From the Westborough Line to Parkerville Road. The route is in good shape along the right of way and on current roads, though there is a steep grade that will need to be addressed in the future .

Section 4.2 – From Parkerville Road to Breakneck Hill Road. This is a challenging section with a ramp, a tunnel, and some new construction required where the right of way is blocked.

Section 4.3 – From Breakneck Hill Road to the Framingham Line. This section should be delayed until an agreement can be reached with CSX.

Section 5.1 – This section connects the Southborough Line to the Bruce Freeman Rail Trail. Like the previous section, completing this trail segment will require an agreement with CSX .

Explanation of Trail Sections—Branches



Note that all sections of the branch are prepended with an A (for Aqueduct). Also, the numeric code for the town is retained from the main trail maps, which means that the segments shown here do not necessarily connect in numerical order.

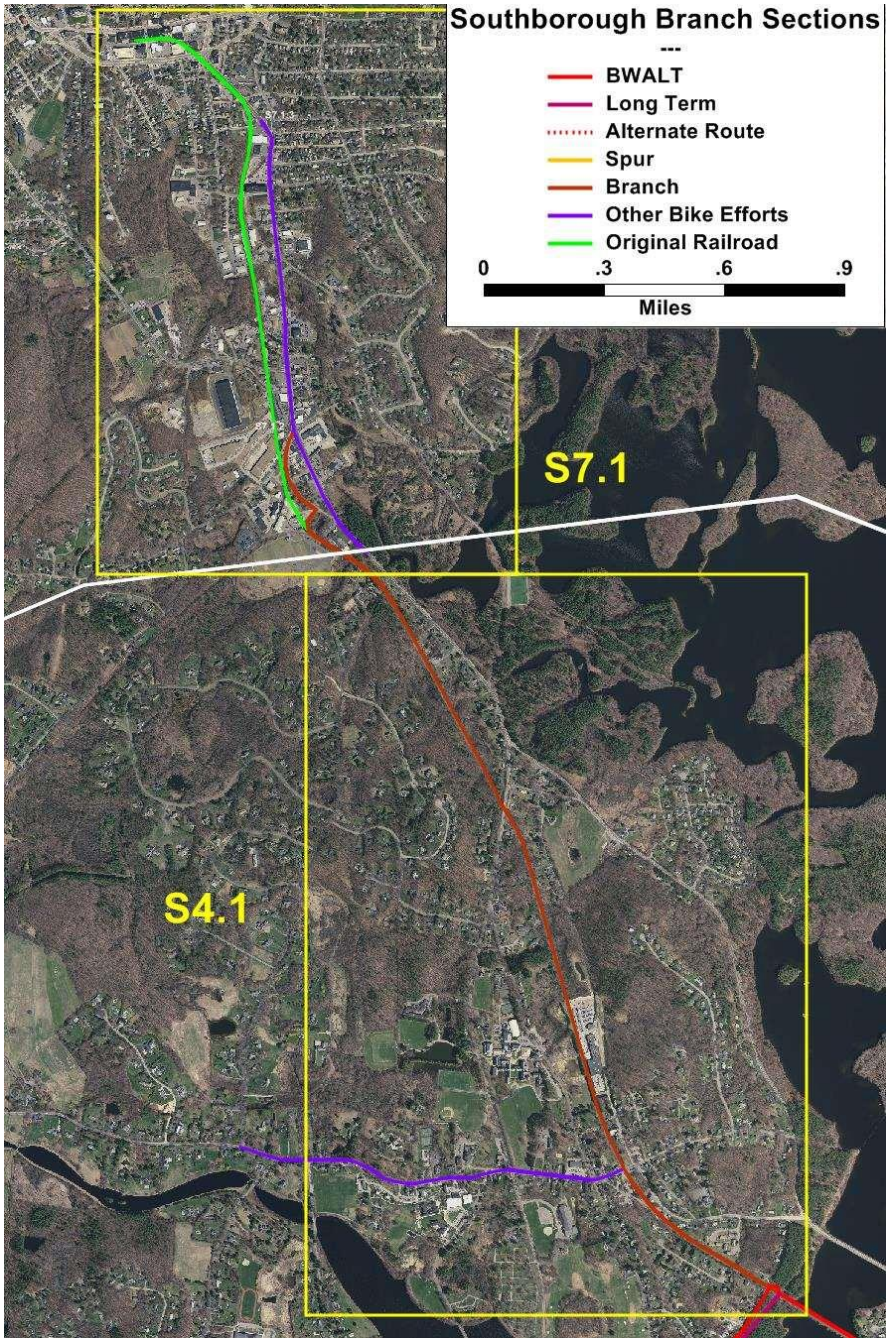
Section A3.1 – This section follows Lyman Street to the former Westborough State Hospital then crosses the hospital land to reach a road around Cedar Hill.

Section A2.1 – This section continues down the road by Cedar Hill, then works its way to the start of the covered portion of the Waschusetts Aqueduct.

Section A2.2 – This section follows the aqueduct and faces some challenging road crossings up to Rice Street.

Section A2.3 – This section continues following the aqueduct. There is a railroad crossing and one challenging road crossing to the Berlin town line.

Section A6.1 – This section is on the aqueduct. It is probably the easiest off road section to construct on the branch.

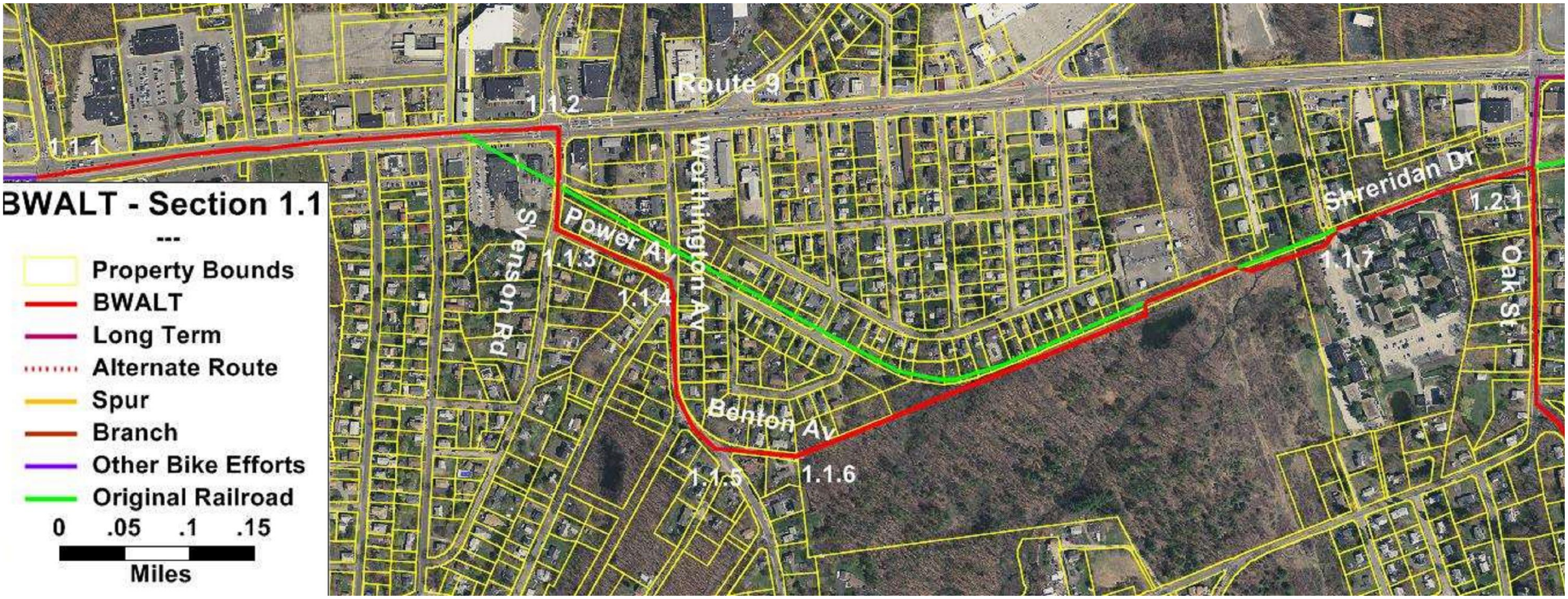


Note that all sections of the branch are prepended with an S (for Southborough). Also, the numeric code for the town is retained from the main trail maps, which means that the segments shown here do not necessarily connect in numerical order.

Section S4.1 – This section follows the former second track of the CSX line from White Bagley Road to the Marlborough line.

Section S7.1 – This section uses mainly on the road bike lanes currently being developed by Marlborough to get from the Southborough line to downtown.

Section 1.1 – Quinsigamond Ave to Oak Street



This section of the original trolley line ran briefly along what is currently Route 9 but then had to divert onto a private right of way to circumnavigate prohibitively steep grades. .

1.1.1 Mile 0.00 – The trail starts at Quinsigamond Avenue, to the west bike lanes across the Burn's bridge provide the link into Worcester. Heading east through Shrewsbury's Lakeway Business District bike lanes are needed for the trail.

1.1.2 Mile 0.38 – The trail diverts from Route 9 with a southerly turn onto Svenson Road and crosses the old trolley right of way before turning on Power Ave. The traffic light at Route 9 and Svenson road will need to be reconfigured to accommodate bicycle traffic.

Looking West to the Burns Bridge

1.1.3 Mile 0.46 – The trail turns left onto Power Avenue.

1.1.4 Mile 0.56 – The trail turns right onto Worthington Avenue.

1.1.5 Mile 0.70 – The trail turns left onto Benton Avenue.

1.1.6 Mile 0.75 – At the end of Benton Avenue, the trail needs new construction across the National Grid property.

1.1.7 Mile 1.20 – Sheridan Drive is the old right of way raised to meet Oak Street at grade.

1.2.1 Mile 1.40—The section ends at Oak Street. The original trolley had Oak Street crossing on a bridge. This crossing may need a flashing sign for bicycle and pedestrian traffic.

Looking east on Route 9 from near the start of the trail. Note no place for bicycles

Sheridan Drive looking East

Spurs

There are no spurs presently planned. This is a challenging area to construct a trail, though there could be high potential value to constructing routes off the main line to both businesses and residences.

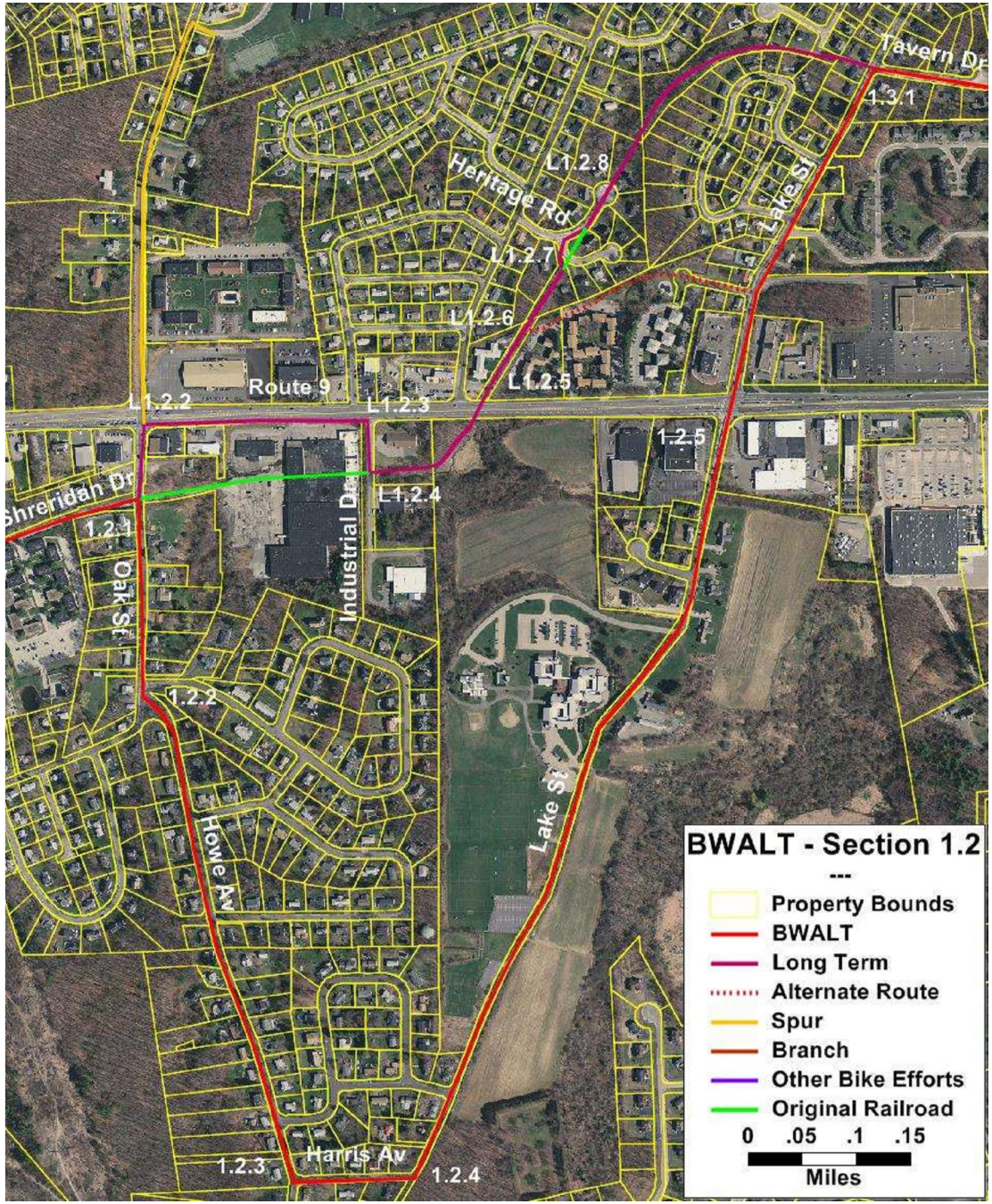
Easements

There are two easements needed in this section:

1.1A	32-550000	New England Power Co
1.1B	33-066000	Sheridan Apartments

Notes

Section 1.2 – Oak Street to Lake Street



While much of this section has the original trolley line unblocked, trying to utilize it would take an extremely large number of easements. Due to the significant added length of the initial route, the original trolley line is presented as a long term approach.

The initial route is from the CMRPC study [CMR2013] on the trail. While the study offers a number of alternatives, this route can be done with the least amount of work and the flattest grades. Note: the grades will still make this an unattractive section.

1.2.1 Mile 1.40 – The section starts by turning south on Lake Street. All of this route needs improvements such as bike lanes.

1.2.2 Mile 1.59 – The trail turns onto Howe Street.

1.2.3 Mile 2.08 – The trail turns left onto Harris Avenue.

1.2.4 Mile 2.20 – The trail turns left onto Lake Street. Much of this route should be improved as a spur even if the long term route is chosen.

Lake Street looking North past the Glavin Center

1.2.5 Mile 2.98 – The trail crosses Route 9. The traffic light at this point needs to be upgraded for bike traffic.

1.3.1 Mile 3.32 – The section ends at Tavern Drive.

Long Term Route

1.2.1 Mile 1.40 – The section starts by turning north on Lake Street. A bike lane is needed here, preferably a separate bi-directional lane.

L1.2.2 Mile 1.47— The trail turns onto a separate bi-directional bike lane along Route 9.

L1.2.3 Mile 1.68— The trail turns onto Industrial Drive

L1.2.4 Mile 1.73 – The right of way is intact from Industrial Drive to Route 9. Unfortunately, though, much of the route is wet and will require proper drainage. The safest approach for the trail would be a tunnel under the highway at this point.

L1.2.5 Mile 1.87 – The trail follows an apartment parking lot

Right of Way climbing from Route 9 towards Heritage Road

L1.2.6 Mile 1.95— The trail enters a cut area and a steep grade. A possible alternative is to cross the apartment complex to the east.

L1.2.7 Mile 2.03 — The trail enters the Heritage Road neighborhood, careful thought is needed on how best to get through here.

L1.2.8 Mile 2.11 – The trail follows the old right of way as much as possible. This section needs checking on the ground to find the best route balancing the needs of the trail and the landowners.

1.3.1 Mile 2.42 – The section ends on Lake Street at Tavern Street. A flashing bicycle and pedestrian sign will be needed here. This route saves over one mile of pedaling.

Spurs

A spur up Oak Street to the Oak Middle School should be investigated. The grades on this route make this questionable.

Easements

This section of the trail requires a large number of easements for the main route as proposed.

L1.2A	33-080001	St Marys Assyrian Orthodox Church
L1.2B	33-082001	C&L Development and Finance Corp
L1.2C	33-244000	James Town Reality LLC
L1.2E	33-217004	Bhiyyan Abdullah Mamun
L1.2F	33-212000	Bhupathraju Naga V
L1.2G	330211001	Basani Sadashivudu
L1.2G	33-357000	Feng He
L1.2H	33-358000	Usha Mathur
L1.2I	33-359000	Robert Thebeau
L1.2J	34-009001	John Kleminich

Notes

If the long term route is completed, the original routing should be retained as a spur, servicing the Shrewsbury Crossing Shopping Center and the Glavin Center.

Section 1.3 Lake Street to Fruit Street

This section has the right of way essentially intact. It would make an excellent pilot section for Shrewsbury.

1.3.1 Mile 3.32 – The trail goes down Tavern Street, which covers the old right of way.

Looking West from Route 140

Overgrown right of way east of Route 140

1.3.2 Mile 3.44 – At the end of Tavern Street a short piece through the woods, then follow an un-paved driveway to Route 140 which will need a flashing warning sign.

1.3.3 Mile 3.62 – From Route 140, the old right of way is town owned to Melody Lane.

1.3.4 Mile 3.69 – A short diversion down Melody and Lamplighter Lanes is probably a safer way through this intersection. From Lamplighter, the old right of way continues intact to South Street.

Right of way west from Melody Lane

Right of way looking east from Lamplighter Dr

1.3.5 Mile 4.04 – The right of way is close to flooded by beaver activity. This needs to be fixed.

Right of way looking West in area with beavers

1.3.6 Mile 4.14 – The trail route crosses South St.

1.3.7 Mile 4.22 – The trail route is currently blocked by DPW using the area as a dump.

1.3.8 Mile 4.49 – The right of way has been encroached upon by an abutter.

Right of way looking West from Fruit St

1.4.1 Mile 4.55 – End of this section.

Spurs

A potential spur would be south on Route 140 to the Shrewsbury Crossing Shopping Center.

Easements

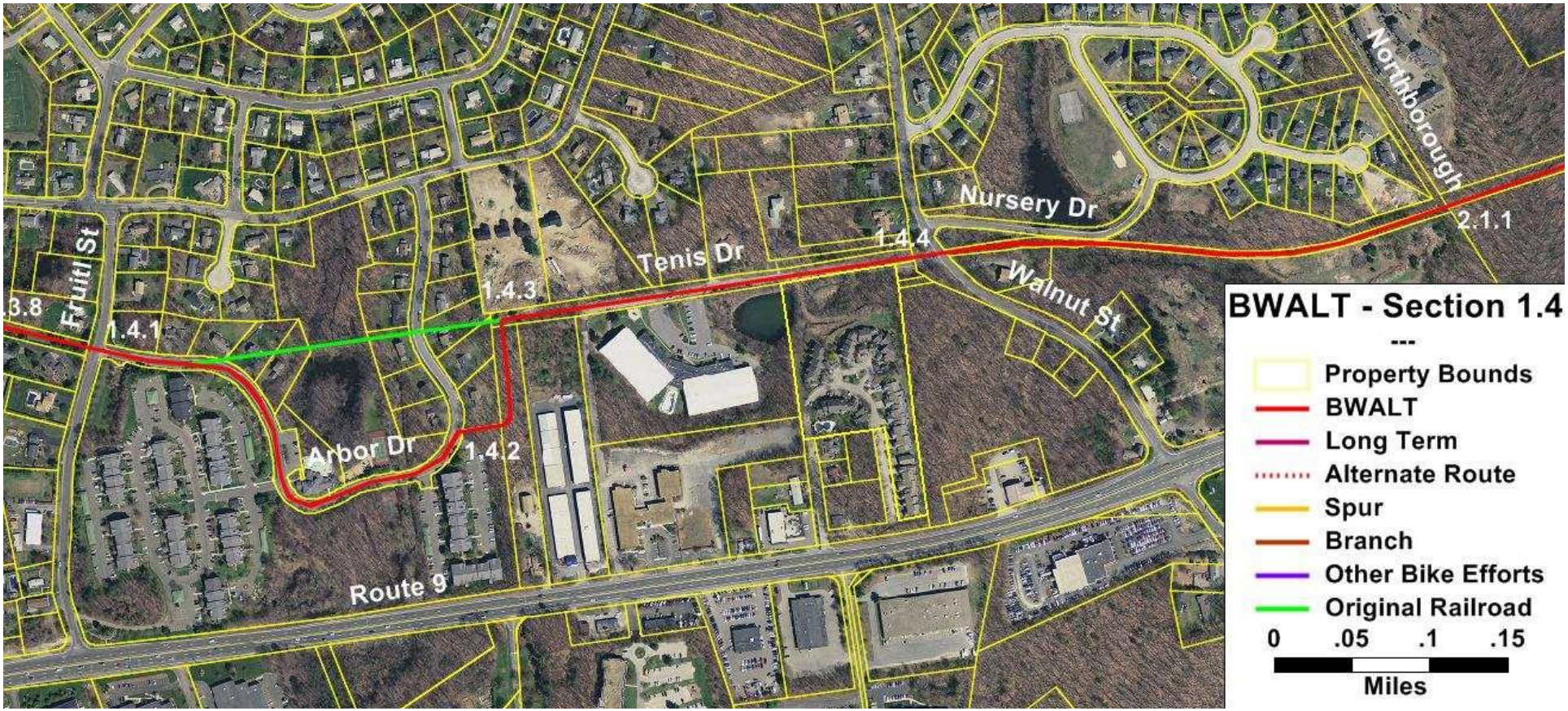
This section of the trail requires one easement for the route as proposed.

1.3A	34-021000	Ralph A Eaton Trust

Notes

The trail segment from Lamplighter Lane to South Street would make a good pilot project. The only challenges are the tree removal and fixing the beaver problem. The beavers should be fixed regardless of the trail because of the existing sewer line.

Section 1.4 Fruit Street to Northborough Line



This section has a single piece of challenging construction where roughly 500 feet of trail must be excavated and graded to change elevation.

1.4.1 Mile 4.55 – The trail goes down Arbor Drive. It follow the road to bypass the area of the original route that has been raised and built over with four house lots.

1.4.2 Mile 4.86 – The trail enters an area with the three easements in this section. This piece of trail will require significant earth moving to lower the steep grade down to street level.

Right of way west of Tennis Drive

1.4.3 Mile 4.96 – The right of way is intact west of Tennis Drive then follows Tennis Drive to Walnut Street.

Tennis Drive looking East

1.4.4 Mile 5.55 – The trail crosses Walnut Street and continues east on a town owned right of way. Of note: the homeowner on the east side of the Walnut Street crossing currently uses right of way as part of his yard.

2.1.1 Mile 5.88 – Northborough town line - End of this section

Spurs

No spurs are planned in this section.

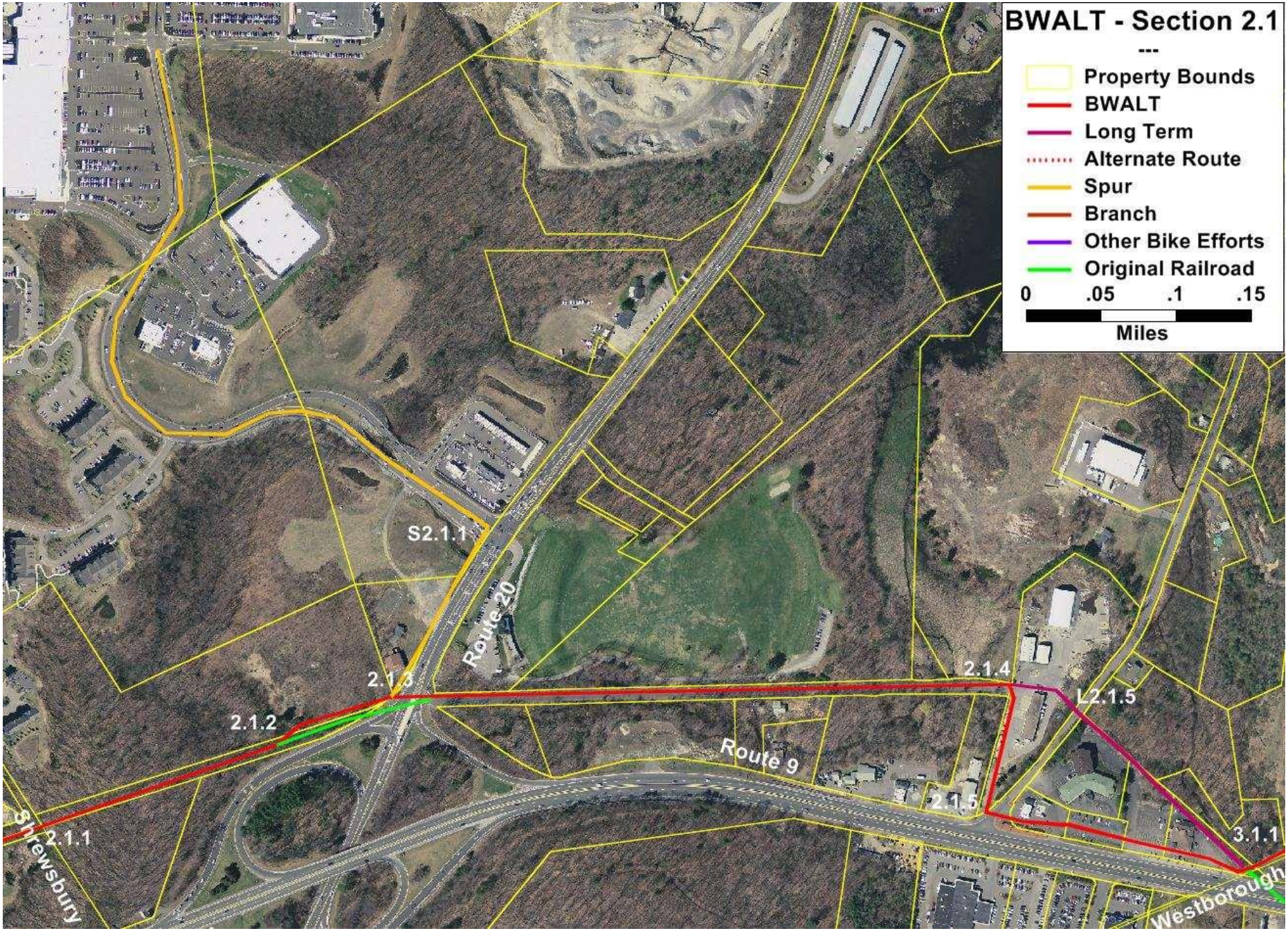
Easements

This section of the trail requires three easements for the route as proposed.

1.4A	35-024000	Home Properties Haynes
1.4B	36-002000	Gary B Burkhart
1.4C	36-005001	Shrewsbury Sports Center

Notes

Section 2.1 Shrewsbury Line to Westborough Line



Northborough holds the shortest section of the proposed main trail. The section provides connections to major shopping and affordable housing in the southwest part of town.

2.1.1 Mile 5.88 – The trail continues on the old right of way from Shrewsbury, through the woods just south of Avalon Northborough and Northborough Crossing.

2.1.2 Mile 6.05 – The old right of way runs through what is now the Route 9 and Route 20 interchange. The trail will need to diverge from the right of way to what is now a dirt driveway. An effort should be made to see if a spur to new road south of Shops Way is possible.

2.1.3 Mile 6.14 – The crossing of Route 20 by the trail will require thoughtful work to connect it to the MassDOT driveway on the east side of Route 20 just north of Route 9.

Looking east from Route 20 down the access to MassDOT

2.1.4 Mile 6.55 – In order to avoid steep hills, the preferred route in this section would share the Mass DOT driveway and then cross the Mass DOT lot to access Lawrence Street near Route 9.

Grade difference at Lawrence Street

2.1.5 Mile 6.64 – From Lawrence Street, the trail follows the parking lots of the Motel 6 and the restaurant at 45 Belmont Street.

3.1.1 Mile 6.82 – Westborough Line

Long Term Route

L2.1.5 Mile 6.60 – From the MassDOT lot the trail would use a tunnel under Lawrence Street then follow the parking lots.

L3.1.1 Mile 6.76 – Westborough Line

Spurs

There is spur in this section, this will be linkage from the trail to Avalon Northborough and Northborough Crossing. The initial section from 2.1.3 to S2.1.1 should likely be a two way separated bike lane along Route 20.

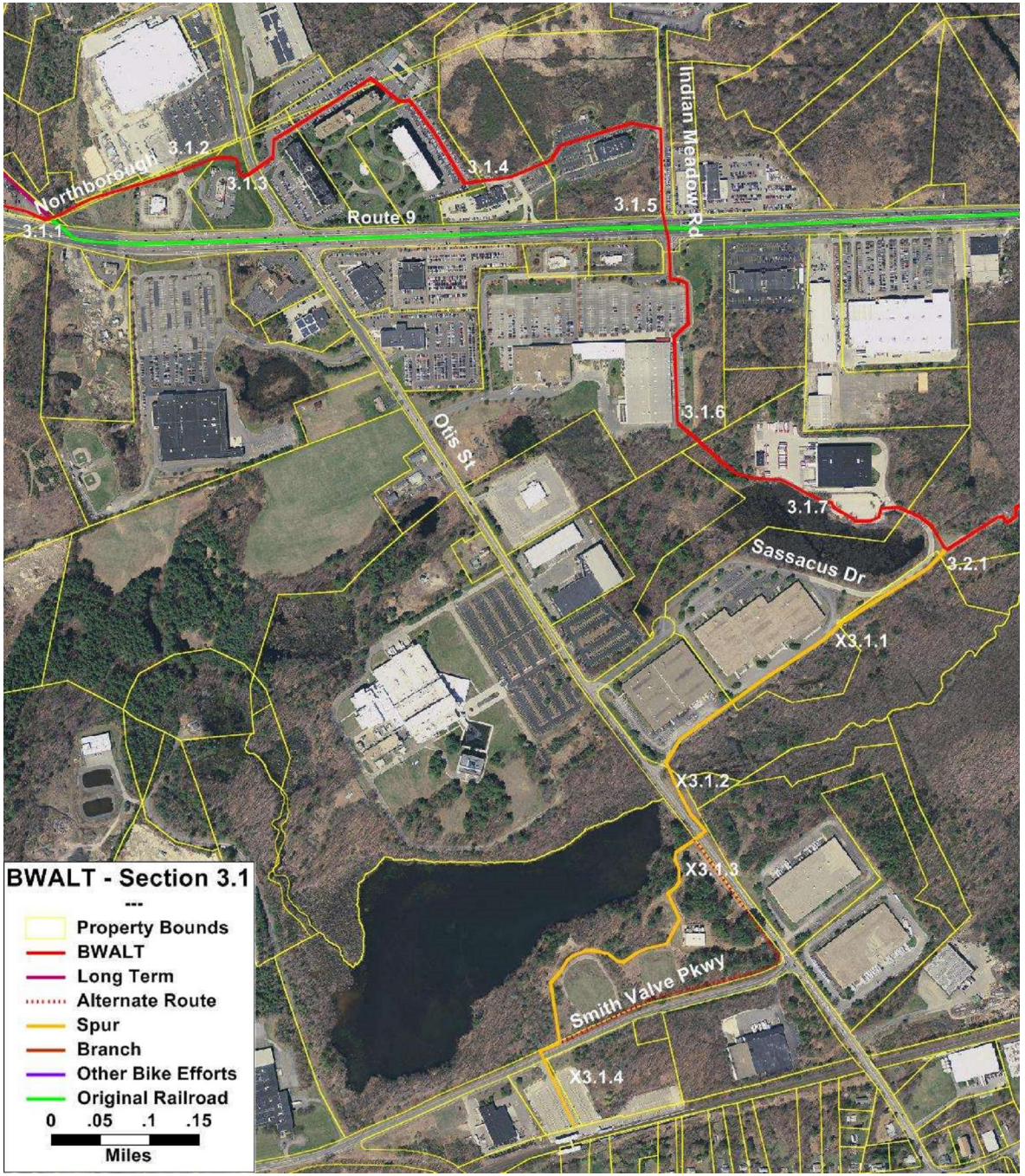
Easements

This section of the trail requires several easements for the main route as proposed.

2.1A	108-4	Alexander Lebeaux
2.1B	108-3	AVB Northborough Inc
2.1C	109-7	Massachusetts Department of Transportation
2.1D	109-20 109-22 109-23	Om Shri Jagadamba LLC
2.1E	109-32 110-1	Ken and Rod Reality

Notes

Section 3.1 Northborough Line to Sassacus Drive



The route entering Westborough from Northborough is one of the more challenging portions of the trail. With the original trolley line on Route 9, and the density of traffic in the area, there is no obvious route.

Route 9 looking West to Northborough Line

3.1.1 Mile 6.82 – The trail loops to the north of the detention basin and the bank climbing to the access road to Walmart.

3.1.2 Mile 6.96 – The trail will cross the access road near the Walmart parking lot, then begins descending through a cut that will need to be dug to Otis Street.

3.1.3 Mile 7.05 – The trail crosses Otis Street and enters the Fountainhead Apartment Complex by the driveway. It follows the parking lots to the southwest corner of the complex.

Looking up the Fountain Head Apartments Driveway and across Otis St

3.1.4 Mile 7.36– A short piece of construction is needed to cross to the parking lot of the restaurant and shopping area. The trail then follows the parking lot to Indian Meadow Road south to cross Route 9.

3.1.5 Mile 7.66– The trail crosses Route 9 at the light and follows the parking lot access to the southeast corner of the Speedway Plaza.

Speedway entrance looking North

3.1.6 Mile 7.79– The trail will need new construction including potentially some boardwalk to reach the parking lot of the Coca-Cola facility.

3.1.7 Mile 7.98– The trail follows the parking lot and the back of Sassacus Drive to the sewer right of way.

3.2.1 Mile 8.14 – End of the section.

Spurs

There is one long spur to the MBTA station.

3.2.1 Mile 8.14 – The spur starts at the end of the section following the sewer line that the initial part of section 3.2 uses.

X3.1.1 Mile 8.23 – The spur reaches the back of the industrial buildings. This area is challenging due to the needs of the companies and the wetlands.

X3.1.2 Mile 8.48 – The spur comes out to Otis Street and follows the right of way to the stream out of Hocomonco Pond. A culvert will be needed to cross the stream.

X3.1.3 Mile 8.56 – The spur continues along Otis and crosses opposite the gate to the superfund site.

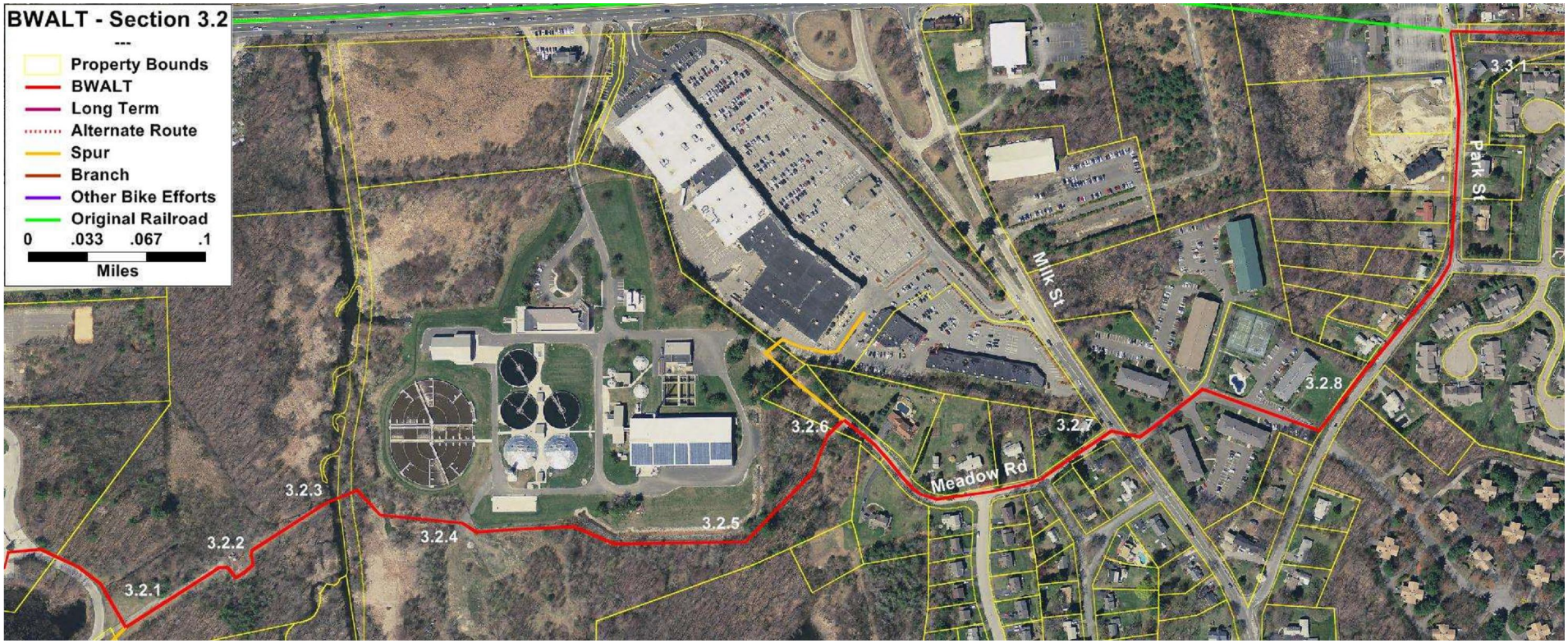
X3.1.3 Mile 8.99 – The spur goes through the superfund site and ends at the MBTA station.

Easements

This section of the trail requires a large number of easements for the main route as proposed.

3.1A	25-33	Berkshire Bank
3.1B	25-18	Archland Property I LLC
3.1C	25-26	Northland Fountainhead
	25-19	LLC
	25-20	
3.1D	26-61	Leslie S Carey Trustee
3.1E	26-61B	Route 9 Realty LLC
3.1F	26-61A	Commerce City LLC
3.1G	32-1	EK Parivar LLC
3.1H	26-27	RK Westboro LLC
3.1I	26-32C	CocaCola Bottling Co
X3.1A	26-32	GIJV MA 4 LLC

Section 3.2 – Sassacus Drive to Park Street



Due to the extensive wetlands and a required river crossing, this section of trail will be challenging to construct.

3.2.1 Mile 8.14 – The trail follows the sewer right of way some of which is graded as a road to the river. Whether the trail follows the access road or has new construction to the south needs to be investigated.

3.2.2 Mile 8.21 – The trail jogs around the sewer pumping station.

3.2.3 Mile 8.29 – The Assabet River crossing. A roughly 50 foot long bridge is needed to cross the river, then extensive grading is needed to climb at a reasonable grade to the southwest corner of the treatment plant.

Assabet River crossing

3.2.4 Mile 8.37 – The treatment plant access road and fence. The trail will follow the fence line from this corner.

3.2.5 Mile 8.54 – The trail heads into the woods from the treatment plant. This will involve extensive grading and design.

3.2.6 Mile 8.63 – This section of trail will follow Meadow Road to Milk Street

3.2.7 Mile 8.81 – Cross Milk Street into Carlton Gardens. The crossing presents a number of safety hazards that need to be addressed. This section follows the parking lots through Carlton Gardens Condominiums and then a ramp up to Park Street.

Milk Street crossing

3.2.7 Mile 8.97 – This section of the trail follows Park Street to the trolley right of way behind Penta Communications Efforts should be made to provide a bike lane along the road.

3.3.1 Mile 9.19 – End of this section

Park Street

Spurs

There is one potential side path in this section.

The spur would follow Meadow Road towards the treatment plant, then cross the town owned land on new construction to reach the shopping center.

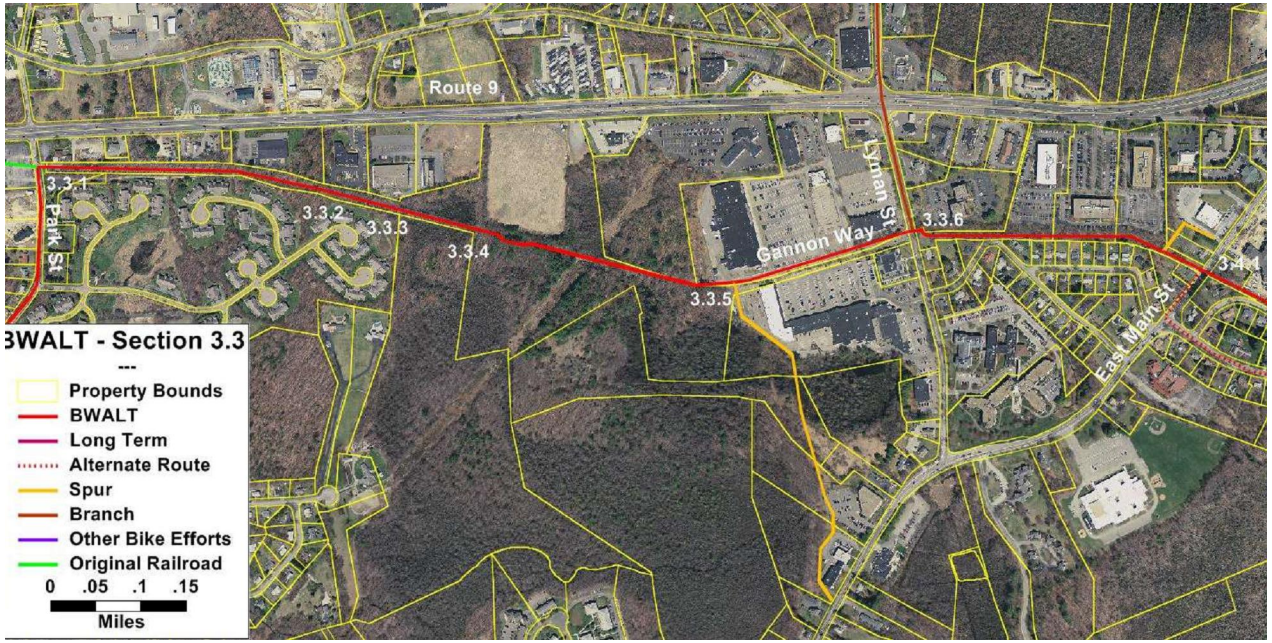
Easements

This section of the trail requires two easements for the main route as proposed.

3.2A	26-32B	Fund IX Westborough Industrial Sassacus Dr LLC
3.2B	27-259	P & M Properties LLC
X3.2A	26-48	OSJ Of Westborough LLC

Notes

Section 3.3 – Park Street to East Main Street



This section from Park Street to East Main Street follows the old trolley right of way and would be relatively easy to construct except for routing next to Gannon Way.

Trail in Wooded Section by Walker Meadows

3.3.1 Mile 9.19 – Leaving Park Street the trail would follow the old Boston and Worcester right of way past the Walker Meadow over 55 housing development. This initial piece is still wooded and would need to be cleared. There is at least one section in the area that might need improved drainage.

Cattle Underpass at Walker Meadows

3.3.2 Mile 9.53– The trail needs to cross an old cattle underpass, at present the plan is to fill in the gap. Beyond this a fence needs to be removed or relocated.

Fence at Walker Meadows

3.3.3 Mile 9.62– The trail follows the right of way that has been improved for use by the sewer for Walker Meadows. This section will need fencing.

Sewer right of way east of Walker Meadows

3.3.4 Mile 9.71– The trail except for a diversion around part of the CarMax property follows the old right of way.

Road from back of plaza

3.3.5 Mile 9.99– The trail hits Gannon Way, the plan is to route the trail along the north side of the road where the sidewalk presently is. This will require some significant construction.

Gannon Way looking west, trail will follow tree line at right above

3.3.6 Mile 10.23 – Crossing Lyman Street, the route stays on the old right of way to East Main Street. The old station site at the crossing would be a good pocket park

Old station site with historical marker

Right of Way East of Lyman Street

Right of way from East Main looking west

3.4.1 Mile 10.56 – End of this section

Spurs

One potential spur would leave the trail in the plaza and lead to East Main closer to downtown.

Another potential spur would link the trail to the post office on East Main Street.

Easements

This section of the trail requires three easements for the main route. Fortunately two are already secured

3.3A	27-62B	180 Turnpike Rd LLC
3.3B	27-60A	CarMax
3.3C	28-64 28-63 28-62	Albany Road - Westboro Executive Park LLC
X3.3A	28-28	Colangelo
X3.3B	27-60A	CarMax
X3.3C	28-18	Mannix John A Trustees
X3.3D	28-18A	Westborough Savings Bank
X3.3E	28-57	Moheban Mansour & Louise Trustees
X3.3F	28-58	U S Postal Service

Section 3.4 – East Main Street to Connector Road

The section from East Main to Connector Road follows an intact portion of the railway right of way.

Right of Way looking across East Main St.

3.4.1 Mile 10.56 – The trail crosses East Main Street along the right of way, passes close to a house on East Main Street, and then runs onto a secured easement through the Highlands over 55 community

Right of Way near Samson Drive

3.4.2 Mile 10.78 – The trail will require a culvert for a stream leading to Cedar Swamp and then snakes its way between two houses where a garden shed currently blocking the route to reach Longmeadow Road.

Stream crossing before Longmeadow

3.4.3 Mile 10.85 – From Longmeadow Road, the trail runs up Hundreds Road until the point at which the road both turns north and meets the western end of the existing right of way trail that bisects the Prentice Forest subdivision.

Wet section leaving Hundreds Road

3.4.4 Mile 11.09 – This is where the trail leaves Hundreds Road and joins the right of way through Prentice Forest. Of note: the drainage at the start of this section will have to be upgraded to manage persistent water flow that cannot be accommodated by the existing storm drain. The right of way also becomes a grassy stretch at this point that will need improvement to become passable as a trail.

3.4.5 Mile 11.31 – At the second crossing of Butterfield Drive and the right of way, the road was built higher than the town specified originally and the right of way is depressed approximately eight feet. The best approach would be to fill in a ramp of no more than 2 to 3 percent grade for the trail. Once across Butterfield Drive, the trail follows the emergency access for the subdivision, and for a non-paved route very little would have to be done for this section.

3.5.1 Mile 11.41 – End of this section

Rise approaching Butterfield Drive

Alternate Routes

The only alternate route on this section is to use Flanders Road to bypass two house lots between East Main Street and Longmeadow Road, which would also disconnect the trail directly with the existing piece of trail at the Highlands over 55 community.

Spurs

At Connector Road, the town should try to get the state to create a safe bike lane the length of the road. This would provide a viable link between the main part of town and office buildings on the roads east of Connector Road.

Easements

This section of the trail requires six easements, one of which is secured.

3.4A	28-94	Meka Srinivasn and Vippagunty Deepika
3.4B	28-93	Westborough Retirement Residence LLC
3.4C	28-102	Patricia Curtis
3.4D	28-103	Paul and Elizabeth Mottla
3.4E	28-105	Nitin Chandel and Sonia Sharma
3.4F	29-81 29-78	Prentiss Forest Preservation Trust
X3.4A	28-97	Duclos Theodore V

Notes

The final challenge of this section is to make the crossing of Connector Road as safe as possible. This will require working with the state, and trimming back a number of trees to improve the sight lines.

Section 3.5 – Connector Road to West Park Drive

This section will connect a number of companies to the trail.

3.5.1 Mile 11.41 – The route to Friberg Parkway is blocked by brush that can easily be removed.

3.5.2 Mile 11.48 – Cross Friberg Parkway and the trail follows the grassy berm just south of the ponds off the road. This area will need improvement for a general trail. The planned office buildings in the area were going to use part of this route as their driveway to the building; if possible we need to work with the developer to accommodate a separate trail.

3.5.3 Mile 11.63 – This is the driveway into the Sudbury Valley Trustees Walkup Robinson Reservation. Little work would be needed to create a non-paved trail.

3.5.4 Mile 11.71 – SVT parking lot and steps. Initially the trail will follow the access road off the parking lot, but long term it is desirable to relocate the steps for a straight trail.

Steps and entrance to Walkup

3.5.5 Mile 11.82 – The cattle underpass bridge has a step that should be made into a ramp, and long-term the bridge needs to be widened.

Cattle underpass bridge and trail

3.5.6 Mile 11.86 – The trail diverges from the original right of way to bypass the steep slope to the office building parking lot. This area will require tree clearing and grading.

3.5.7 Mile 11.94 – The route runs through the parking lots of the office buildings. To enter the parking lot, one parking space will need to be taken.

Trail leaves right of way jogging left

Trail enters Carruth parking lot

Right of way leaving parking lot

3.5.8 Mile 12.09 – The route returns to the old trolley right of way to West Park Drive. Improvements to the surface are needed for the trail.

3.6.1 Mile 12.29 – End of this section.

Right of way from West Park Drive

Alternate Routes

No alternate routes have been identified in this section.

Spurs

There are no planned spurs in this section.

Easements

This section of the trail requires easements from three entities.

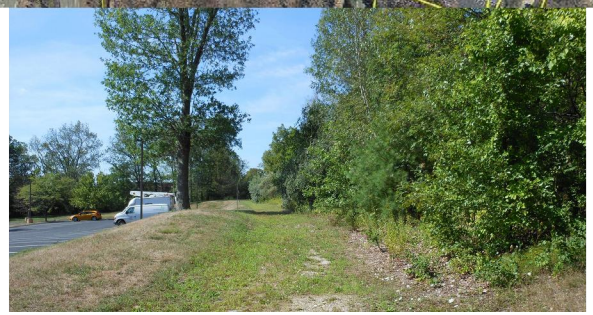
3.5A	29-127	State Street Bank
3.5B	29-120 29-128 30-1 30-50	Carruth Capital
3.5C	29-106	Sudbury Valley Trustees

Notes

Section 3.6 West Park Drive to Southborough Line

This section will link Westborough to Southborough. It will also service the planned office park development on the town line.

3.6.1 Mile 12.29 – The route follows the old right of way of Washington Lane. Some of this has a gravel road along it, but we may need new construction depending on easements.



Looking down Washington Lane

3.6.2 Mile 12.61 – The trail reaches Flanders Road, which it follows to Washington Street. The best approach here would be a bi-directional separated bike lane.

Entrance to Chapel of the Cross

3.6.3 Mile 13.02 – The path follows driveway of Chapel of the Cross to its parking lots.

3.6.4 Mile 13.34 – The trail will have new construction from the parking lot to an old woods road.

3.6.5 Mile 13.42 – The route reaches an old woods road which it will follow to the original right of way.

Old Right of Way looking West

3.6.6 Mile 13.66 – The path follows the right of way to the new extension to Crystal Pond Road.

3.6.7 Mile 13.90 – Crystal Pond Road, until Southborough signs on this is the logical end.

Right of Way at Crystal Pond Road

4.1.1 Mile 13.92 – The section ends at the Southborough town line

Long Term Route

3.6.1 Mile 12.29 – The route follows the old right of way to I495.

L3.6.2 Mile 12.35 – Tunnels will be needed under the southbound and northbound lanes of I495. The right of way is intact between the travel lanes.

L3.6.3 Mile 12.51 – The trail turns down Washington Street. Efforts should be continued to secure the original right of way

L3.6.4 Mile 12.61 – The route uses the northern entrance to the Chapel of the Cross

3.6.4 Mile 12.76 – The trail reaches the parking lot and rejoins the route.

Northern Entrance to Chapel of the Cross

3.6.5 Mile 12.84 – The route reaches an old woods road which it will follow to the original right of way.

3.6.6 Mile 13.08 – The path follows the right of way to the new extension to Crystal Pond Road.

3.6.7 Mile 13.32 – Crystal Pond Road, until Southborough signs on this is the logical end.

4.1.1 Mile 13.34 – The section ends at the Southborough town line.

Spurs

A very desirable spur would be a bike lane or separate path parallel to the Crystal Pond Road Extension .

Alternate Routes

A cheaper and quicker construction alternative would be to use the parking lots of 2200 West Park Drive and the office building on Flanders.

An alternate to the chapel's driveway is to go up Washington Street to the northern entrance to the chapel.

Easements

This section of the trail requires a large number of easements for the main route as proposed.

3.6A	30-1, 30-1A	Carruth Capital
3.6B	30-10A	Chapel of the Cross
3.6C	30-10C	New England Sikh Study Circle
3.6D	31-12	Joanna D`Andrea
L3.6A	30-3	STJ West Park Equity Partners LLC
L3.6B	30-49	Westborough Investors Limited Partnership
L3.6C	30-8	Carruth Capital

Notes

Section 4.1 Westborough Line to Parkerville Road

4.1.1 Mile 13.92 – The section starts on the old right of way, and proceeds to Banfill Lane.

4.1.2 Mile 14.33 – The trail follows Banfill Lane, which is the old right of way at this point.

4.1.3 Mile 14.52 – At Fairview Drive the trail follows the road. Long-term. it would be desirable to follow the old right of way to avoid the hills.

4.1.4 Mile 14.88 – The trail turns onto Parkerville Road

4.2.1 Mile 15.14 – This section ends at the bridge abutments over Parkerville Road. Long-term, it would be desirable to replace the bridge and avoid the grades.

Looking west from Banfill Lane

Looking east on Banfill Lane

Old Trolley Line Bridge Abutments at Parkerville Road

Long Term Route

4.1.3 Mile 14.52 – The trail would follow the old right of way through a number of side and back yards.

L4.1.4 Mile 14.72 – The trail turns onto High Ridge Road which it follows to Summit Road turning north.

L4.1.5 Mile 14.92 – The trail uses new construction to get to the old right of way near the Parkerville Bridge which would need to be replaced.

L4.2.1 Mile 15.11 – This section ends at the bridge abutments over Parkerville Road.

Spurs

There are no spurs in this section.

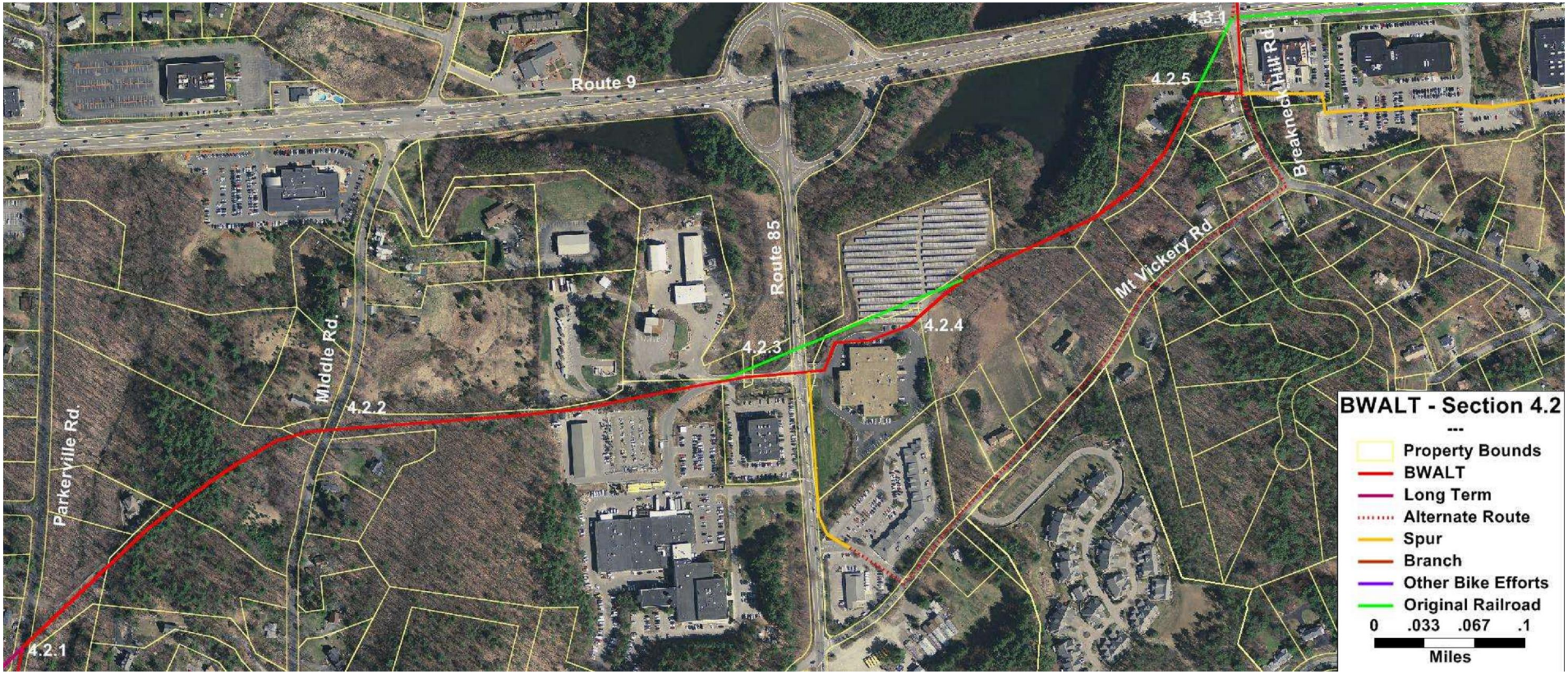
Easements

This section of the trail requires two easements for the main route as proposed.

4.1A	11-2	John Garabedian, Trustee
4.1B	12-46	A A Farooq Ansari, Trustee
L4.1C	19-52	Ronald and Deborah Kolodziej
L4.1D	19-58	Susan Enterkin Trustee
L4.1E	19-11	Joseph and Laurie Provo
L4.1F	19-37	Robert and Maureen Galvin
L4.1G	19-31	Michael Bourassa

Notes

Section 4.2 Parkerville Road to Route 9



This section presents a number of challenges. As a temporary approach Middle Road and Mount Vickery Road could be considered as a route. The work needed to make these bike safe precludes their permanent use.

4.2.1 Mile 15.14 – The trail will begin at Parkerville Road with a ramp up to the old right of way. If in the future the bridge at Parkerville can be replaced to avoid the grades, the ramp still represents a good access for the trail.

4.2.2 Mile 15.39 – The trail approaches Middle Road in a cut. Drainage is a problem in this area. At present a ramp will be used to climb to Middle Road; long-term a tunnel under the road is desirable.

Cut at Middle Road looking west

4.2.3 Mile 15.72– From Middle Road, using a ramp down, the trail follows a cut most of the way to Route 85 coming, out adjacent to the entrance to the transfer station to cross the highway at the stop light.

Old Right of Way just west of Route 85

4.2.4 Mile 15.82– The trail follows the office building parking lot to the back.

4.2.4 Mile 15.92– The trail will need a short section of new construction to enter the right of way, which it follows to the day care driveway. The trail follows the day care driveway to Mount Vickery Road.

4.3.1 Mile 16.10– The section ends just south of Route 9.

Alternate Routes

The one potential alternate route is to use Mt. Vickery Road to get from Route 85 to White Bagley Road.

Spurs

There is a spur planned for this section. It will head south along Route 85 to provide a link to the shopping center.

Easements

This section of the trail requires several easements for the main route as proposed.

4.2A	27-43	The Preservation Trust Inc.
4.2B	19-20	Dorothy Phaneuf
4.2C	28-6	Bartolini Builders
4.2D	28-10	Daniel Phaneuf
4.2E	28-21	Commonwealth Gas Co.
4.2F	28-16	150 Cordaville Road LLC
4.2G	28-26	146 Cordaville Road LLC
4.2H	28-15	DCR
4.2I	29-20	Trolley Tracks Inc
X4.2A	37-3	Frank J Rossi Jr Trustee
X4.2B	37-2	CRP-2 Holdings AA LP
X4.3C	37-1	136 Turnpike Rd LLC
X4.3D	37-28	132 Turnpike Rd LLC
X4.3E	37-4	Curo Southborough LLC

Notes

Section 4.3 Route 9 to Framingham Line

The eastern most two sections of the trail depend on a lease from CSX for a rail with trail. CSX has resisted this on other trail projects, but the value of connecting to Framingham makes this worth pursuing.

4.3.1 Mile 16.10– The trail crosses Route 9 and follows White Bagley Road north. The road is narrow, so an investigation should be made of long-term adding a bike track to the reservoir side of the road.

4.3.2 Mile 16.84– The trail crosses the bridge over the railroad and follows the DCR access to the tracks.

Causeway over the Sudbury Reservoir

4.3.3 Mile 17.37– The trail follows the causeway across the reservoir then crosses Central Street at grade, where improvements will be needed for a safe trail crossing.

Central Street railroad crossing

4.3.4 Mile 17.41– The trail follows the north side of the railroad a spur to the north is unused and negotiations with the railroad should include removing it.

Railroad spur east of Willow St

4.3.5 Mile 17.90– The fill for the right of way becomes narrow near Willow Street, in addition a playground for autistic children is adjacent to the tracks and will likely need shielding from the trail. The railroad crosses Willow Street on a bridge, the trail will need a new bridge to cross the road, but the abutments are already in place for what is needed.

Narrow fill west of Willow St

Railroad bridge at Willow Street

5.1.1 Mile 18.15– The section ends at the Framingham line.

Spurs

The primary spur is mentioned above, a route through the parking lots of the office buildings south of Route 9 to connect to the trail.

Easements

This section of the trail requires just two easements..

4.3A	37-16, 37-6	DCR
4.3B		CSX

Notes

Section 5.1 Southborough Line to Framingham Center

The Framingham section of the trail depends on a lease from CSX for a rail with trail. CSX has resisted this on other trail projects, but the value of connecting to Framingham makes this worth pursuing.

5.1.1 Mile 18.15– Trail starts at the town line, and follows the railroad.

5.1.2 Mile 18.36 – A small stream crossing will require a new bridge for the trail. The abutments may be wide enough to support the bridge without work.

Small stream crossing

5.1.3 Mile 18.72 – The trail will cross California Avenue.

California Avenue Crossing

5.1.4 Mile 18.94 – An abandoned spur north of the tracks should be removed if possible.

Massachusetts Turnpike Underpass

5.1.5 Mile 19.07 – The railroad passes under the Massachusetts Turnpike. The trail can probably be run through the existing underpass but clearances are tight. This might be a location to investigate a Trail on Rail approach with appropriate signals.

5.1.6 Mile 19.39 – The route reaches causeway crossing the Foss Reservoir. Fortunately the causeway is wide enough to handle the trail in addition to the railroad. A bridge for the trail will be needed where the railroad has its bridge. Of note the abutments are in place already.

The causeway over the Foss Reservoir.

5.1.7 Mile 20.25 – The trail reaches Temple St, a potential spur to the street can be done through the park.

5.1.8 Mile 20.19 – A short spur is possible to Sun Valley Drive on a sewer access.

The remains of the rail line slated to become the Bruce Freeman Rail Trail.

5.1.9 Mile 20.68 – The BWALT trail from Worcester to Framingham ends here and joins with the Bruce Freeman Rail trail. Framingham is looking at connections to link Framingham State and other parts of town to this point. A possible extension across Route 9 should be urged.

Spurs

There are four potential spurs in this section.

The first would lead to the 9/90 office park. This spur would require extensive grading to get up to street level at Crossing Boulevard. Then on road bike lanes would lead to the 9/90 complex.

The second would be improvements on street to the California and New York Avenue area.

The next would be the access to Temple Street. This would require crossing the tracks so is likely to be opposed by CSX.

The last is a short link to the cul-de-sac on Sun Valley Drive.

Easements

This section of the trail requires one easement for the main route as proposed.

5.1A	CSX

Notes

Section A3.1 Lyman Street to the Northborough Line

The Aqueduct Branch starts where the BWALT trail crosses Lyman Street.

3.3.6 Mile 0.00– The trail starts at the crossing of Lyman Street following the road north towards Route 9.

Lyman Street looking N from the BWALT

A3.1.1 Mile 0.15 – The crossing of Route 9. MassDOT is going to rebuild the intersection with bike lanes. Unfortunately, the lanes will stop about 300 feet shy of the BWALT trail. The town needs to investigate bike lanes both to the crossing and north along the street.

A3.1.2 Mile 0.95 – The trail enters the Westborough State Hospital grounds. The town is now the owner of the property and should work with developers to provide a safe route to the crossing of Lyman Street south of the old power plant.

The road in the state hospital

A3.1.3 Mile 1.55 – The trail crosses Lyman Street and follows the road to the Fish and Wildlife parking lot and beyond. The trail will need work to be a good bike trail.

Fish and Wildlife road to Northborough

A2.1.1 Mile 2.00 – The end of the section is at the Northborough town line.

Spurs

There are no spurs specifically planned in this section.

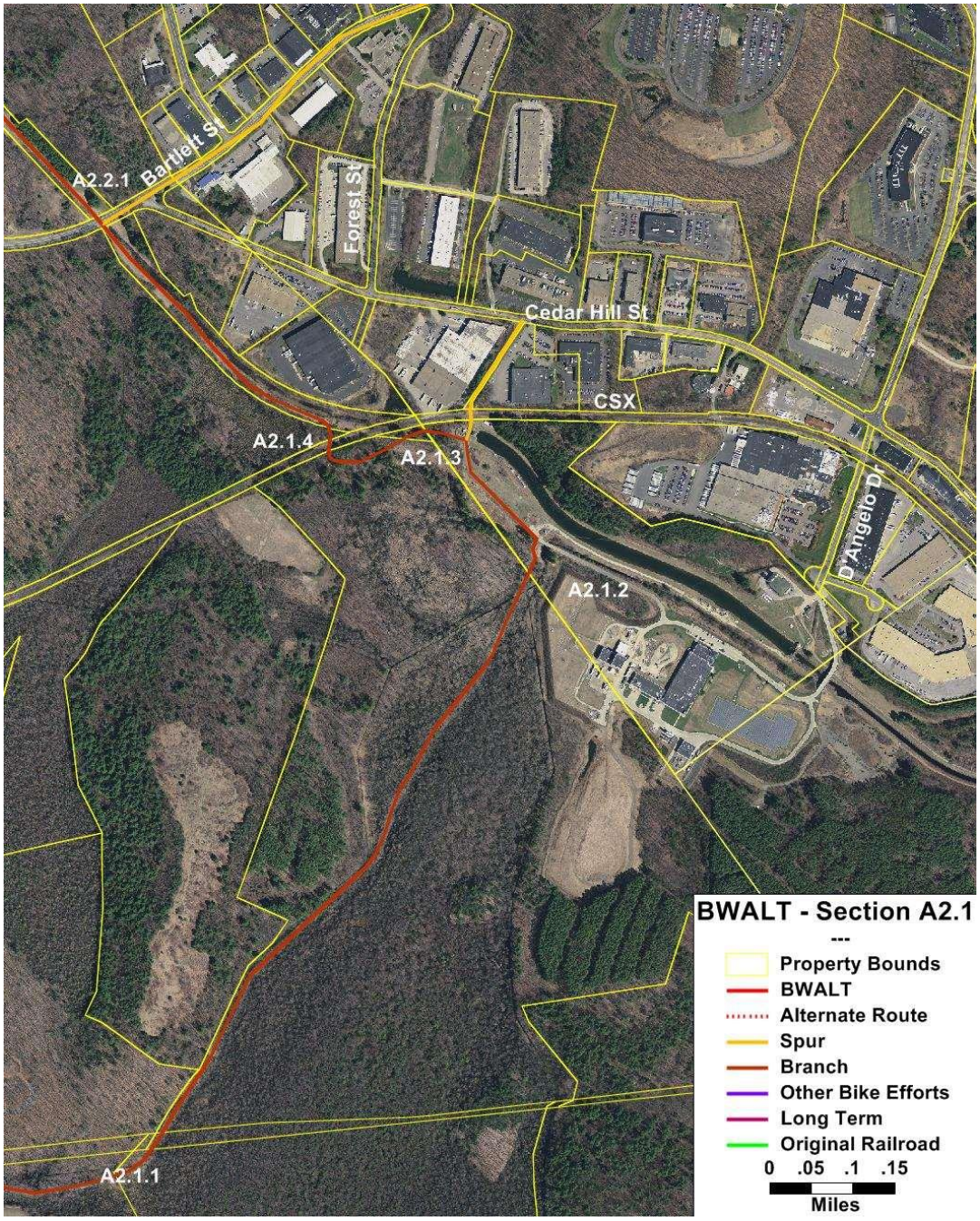
Easements

This section of the trail requires one easement for the main route as proposed.

A3.1A	38-2	MassWildlife
A3.3A	4.8	DCR

Notes

Section A2.1 Northborough Line to Bartlett St



The section continues down the dirt road behind Cedar Hill

A2.1.1 Mile 2.00– The trail follows the road to the MWRA treatment plant.

A2.1.2 Mile 2.88– The trail enters the treatment plant area, and follows the access road west. At the present time the plant is being expanded and this area is not accessible.

A2.1.3 Mile 3.02– A likely spur heads out the access road. Note: this spur could be used as an alternate route with Cedar Hill Street to get to the Bartlett Street access to the aqueduct. The trail on the map follows a DCR woods road to the first area accessible on the Waschusetts Aqueduct.

DCR woods road to treatment plant

A2.1.4 Mile 3.24– The trail must cross the railroad to reach the aqueduct. This crossing will likely a point of contention with CSX. At the aqueduct the trail will be on the side since the central area is still wet.

RR crossing before aqueduct

Aqueduct looking N, trail will be on the left

A2.2.1 Mile 3.61– The section ends at Bartlett St.

Alternate Routes

As mentioned in the text, a possible route would be to go out the MWRA access road then use Cedar Hill Street.

Another possible route would be find a routing to D'Angelo Drive. This route has the advantage of having a public railroad crossing, so we will not be fighting CSX.

Spurs

There is a spur to Cedar Hill Street along the access road.

Additional bike facilities should be built along Bartlett St.

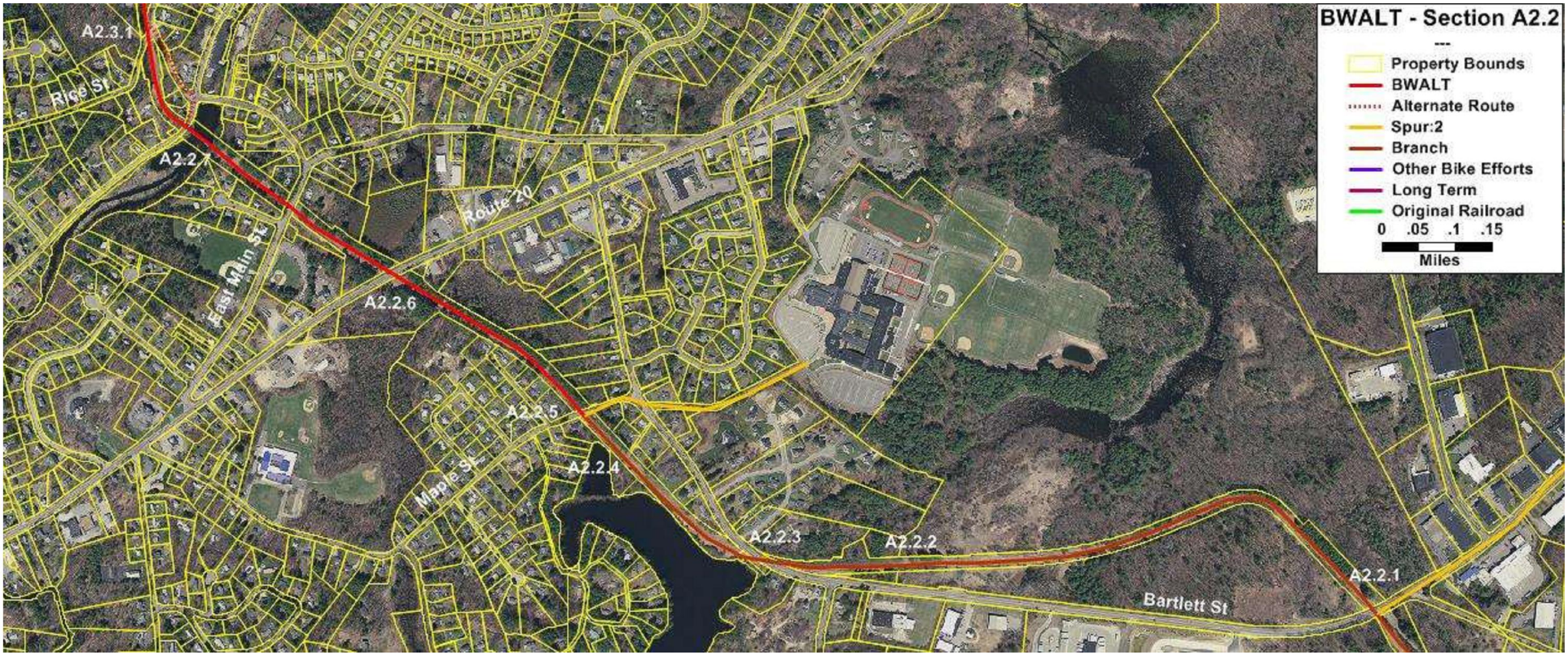
Easements

This section of the trail requires two easements for the main route as proposed.

A3.1A	087.0-0002	DCR
A3.3B	068.0-0002	MWRA

Notes

Section A2.2 Bartlett St to Rice St



The section starts at Bartlett Street. This is probably the most complex section of the trail.

A2.2.1 Mile 3.61– The section begins at Bartlett St.

Aqueduct looking N from Bartlett

A2.2.2 Mile 4.33– The trail encounters the first of several locations where the aqueduct is blocked by a vehicle access. Long-term it is desirable to see if this could be re-engineered for a flat route.

A2.2.3 Mile 4.49– The path crosses Bartlett Street on a curve. This needs to be designed carefully since sight lines are poor and the crossing has to be on the road for a long time.

Aqueduct crossing of Bartlett

A2.2.4 Mile 4.74– The trail goes along Bartlett Pond. A second block is encountered at this point.

Bartlett Pond from the trail

Barrier across aqueduct looking S

A2.2.5 Mile 4.83 – The trail crosses Maple Street. A spur should be considered to the high school.

A2.2.6 Mile 5.15– The route reaches Route 20. The state recently rebuilt the bridge over the aqueduct, but unfortunately it is only about four feet of clearance at its highest point. The only solution for an initial trail is to construct a ramp up and a road crossing.

Route 20 crossing looking N

Looking down at the Aqueduct at E Main St

A2.2.7 Mile 5.49 – The trail crosses East Main Street. Unfortunately the drop to the north is not friendly for a trail. From there the trail continues along the aqueduct crossing the spectacular bridge over the river. Part of the challenge of the bridge will be the steps to the surface while respecting the historic structure.

A2.3.1 Mile 5.66– The section ends at Rice St.

Alternate Routes

A possible alternate to the problems north of East Main Street is to follow East Main to Allen Street and take it to Rice.

Spurs

One spur should be done to the high school.

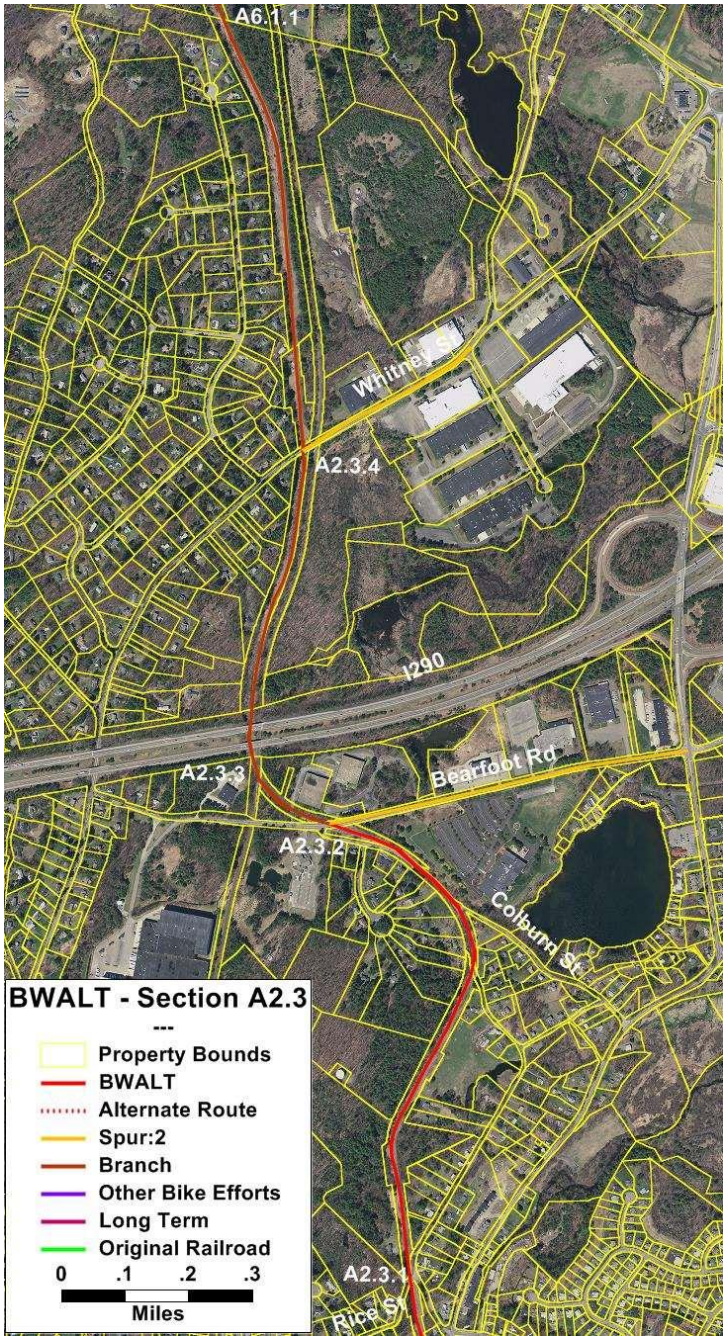
Easements

This section of the trail requires one easement for the main route as proposed.

A3.2A	068.0-0002	MWRA

Notes

Section A2.3 Rice St to Berlin Town Line



This section is a continuation of the last. It does provide connections to a number of businesses in Northborough.

A2.3.1 Mile 5.66– The section starts at Rice St. The current access to the aqueduct going north is to follow Rice to the first driveway then enter the right of way. Some fill and grading is needed to stay off the road. From there the aqueduct is a popular mountain bike trail.

Aqueduct north of Rice St.

A2.3.2 Mile 6.52 – The aqueduct reaches Bearfoot Road. Bike infrastructure should be considered along the road to service the businesses in the area. At present, access to the aqueduct north of Bearfoot is from a businesses driveway.

A2.3.3 Mile 6.67 – A crossing of the railroad is needed to follow the aqueduct. Immediately after the crossing the aqueduct passes under I290.

Aqueduct crossing RR with I290 beyond.

Aqueduct crossing RR with I290 beyond.

A2.3.4 Mile 7.19 – The aqueduct reaches Whitney St. At present, there is a steep rise to the street, followed by a jog to the north and then a steep drop back to the right of way. Long-term, a tunnel should be investigated with the ramps up being used for a spur to service the businesses in the area.

Whitney St looking N.

A6.1.1 Mile 7.88 – The aqueduct continues north as a very nice ride to the Berlin town line the end of this section.

Spurs

Two spurs are proposed in the area. Both should be bike lanes along streets: Bearfoot Road and Whitney Street. In both cases there is significant truck traffic in the area so good infrastructure to protect the riders is desirable.

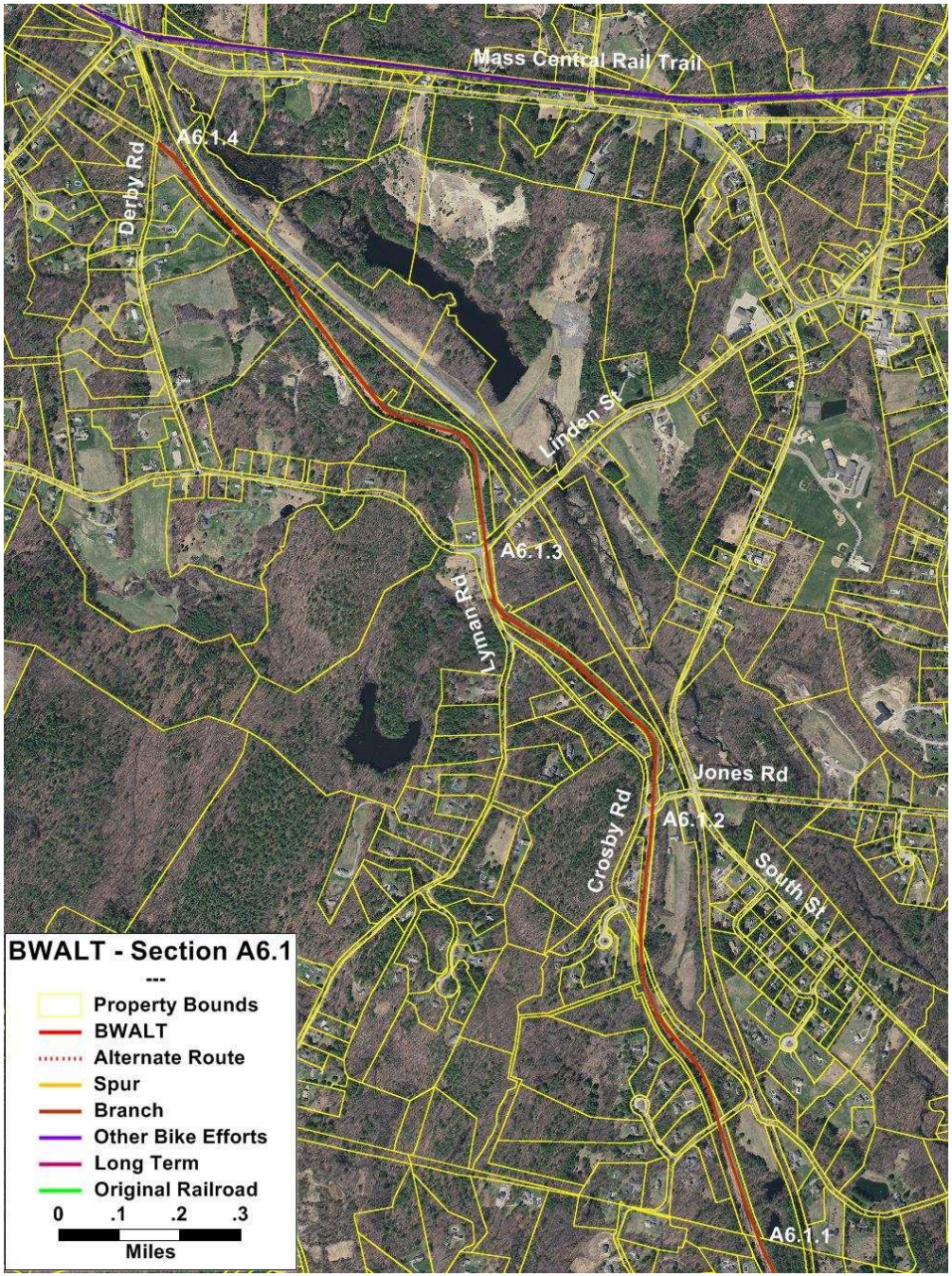
Easements

This section of the trail requires one easement for the main route as proposed.

A3.3A	MWRA

Notes

Section A6.1 Berlin Town Line to Mass Central Rail Trail



The Berlin section of the trail is one of the most beautiful and also one of the easiest to build. The route has no significant challenges.

A6.1.1 Mile 7.88 – The section continues from the Northborough town line and this is basically flat and easy to ride with a mountain bike at present.

A6.1.2 Mile 8.63 – The trail crosses Jones Road. This provides and easy access to South Street and the southern part of town.

Jones Road Looking North

A6.1.3 Mile 9.19 – The trail continues north to Linden Street. This street provides the best access to downtown Berlin.

Looking North from Linden Street

A6.1.4 Mile 10.09 – The trail continues north to Derby Road. The aqueduct right of way beyond this point is in a deep tunnel and inaccessible. Two tenths of a mile north Derby Road hits the planned route of the Mass Central Rail Trail.

Ramp down from Derby Road

Spurs

There are no planned spurs in this section. Improvements to bike and pedestrian infrastructure should be investigated for Jones Road and Linden Street.

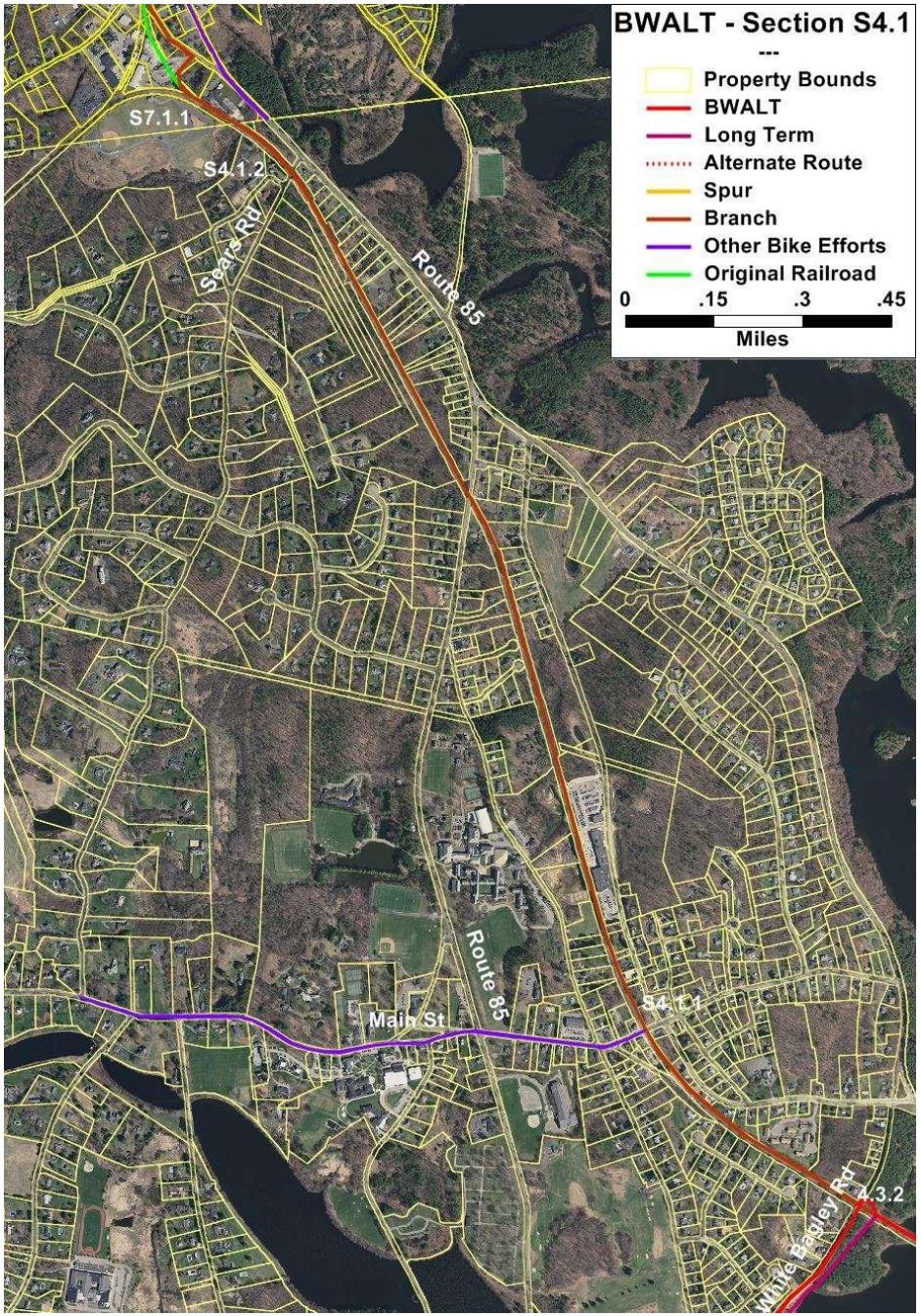
Easements

This section of the trail requires one easement for the main route as proposed.

A6.1 A	MWRA

Notes

Section S4.1 White Bagley Road to Marlborough Line



Southborough encompasses most of the branch to Marlborough.

4.3.2 Mile 0.00 – The section starts where the main trail of BWALT heads to White Bagley Road.

Start of branch, White Bagley Bridge

S4.1.1 Mile 0.50 – The trail goes through down-town Southborough. The proposed bike lanes and sidewalks on Main Street would connect the trail to the rest of the area.

Main Street looking S, trail will be on left

Main Street looking N, trail will be on right

S4.1.2 Mile 2.10 – The trail reaches the Sears Road Bridge. This area has a couple of challenges. A little before the bridge, the wide part of the right of way shifts from the east side of the tracks to the west. In addition, the bridge will need a span for the trail.

Sears Road Bridge looking S

S7.1.1 Mile 2.28 – The trail section ends at the Marlborough line.

Spurs

There are no planned spurs in this section.

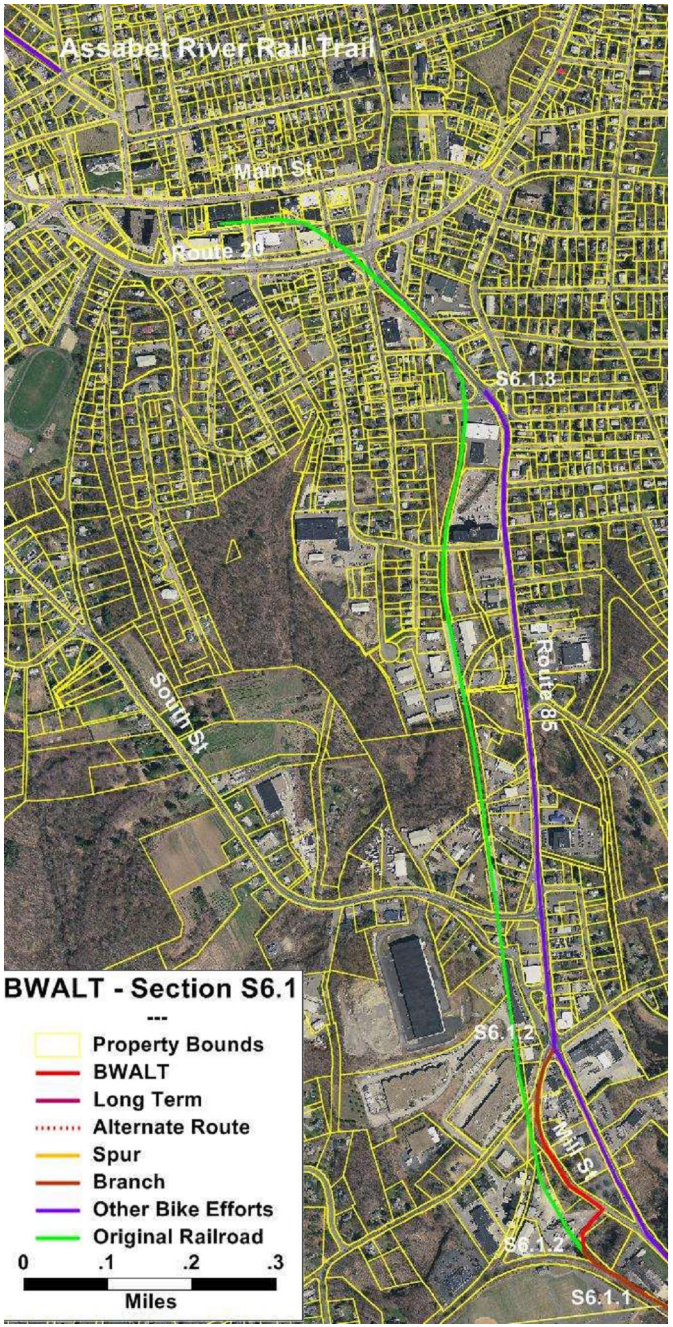
Easements

This section of the trail requires one easement for the main route as proposed.

S4.1A	CSX

Notes

Section S7.1 Marlborough Line to Assabet River Rail Trail



Most of the Marlborough part of the branch is on road using bike lanes currently being developed by the city. Long-term it would be good to keep an eye on the old railroad right of way and secure easements to pieces as they are redeveloped.

S7.1.1 Mile 2.28 – This section lies a short distance before the Fay School access to their ballfields. A little over 1/10 of a mile would be new trail along the railroad.

Fay School driveway for ball fields

S7.1.2 Mile 2.67 – The trail goes down the Fay School access, then follows Mill Street to Route 85. New bike infrastructure would be needed here for the trail.

S7.1.3 Mile 3.47 – At present, the end of the branch does not provide continuous bike infrastructure to the Assabet River Rail Trail.

Spurs

There are no planned spurs in this section.

Easements

This section of the trail requires one easement for the main route as proposed.

S7.1 A	CSX

Notes

Trail Construction

Overview

Building multi-use trails in Massachusetts is challenging. The traditional approach supported by MassDOT is extremely expensive and takes a very long time. Paved trails such as the Assabet River Rail Trail follow this approach. MassDOT supported trails cost typically around $1.5M per mile and can take 10 to 20 years from concept to pavement.

The other approach for multi-use trails is *Community Built* [RTC2013]. In Massachusetts an outstanding example of this approach is the Mass Central Rail Trail built by Waschusetts Greenways. This trail is stone dust and built to a large degree by volunteers, with a cost of typically $50,000 to $75,000 a mile.

For BWALT, a hybrid approach is proposed. Since the trail has a number of potentially expensive crossings, we cannot build the trail without state support. At the same time, showing there is both a need and active community support for the trail is the best way to encourage state funding.

The current goal is to get community support for building the sections we can, including on-road markings for bikes where needed. With this approach, roughly two-thirds of the 18 mile trail could be built as a stone dust path. For an initial demonstration, two sections: from Lake Street in Shrewsbury to Route 20 in Northborough and Park Street to West Park Drive in Westborough are good choices. Hopefully, Shrewsbury can add Quinsigamond Avenue to Oak Street and Southborough can build the trail from Westborough to Route 9 as future sections.

Much of the rest of this section will breakdown the major pieces of the trail.

Work requiring support

While this section focuses on what can be accomplished locally now, there are a number of items that will require major involvement by the Commonwealth, including, from west to east:

- Tunnel under Route 9 west of Lake Street, Shrewsbury *(Long term)*
- Tunnel under Interstate 495 in Westborough *(Long term)*
- Acquisition of an easement on the CSX corridor from Southborough to Framingham

Explanation of Table

The table on the next page breaks down the trail by the following categories for each section and town.

Length – Length in miles of the given region

On Road – Length in miles of the route on road

Other Pavement – Length in miles of other pavement such as parking lots or driveways

New Construction – Length in miles of route not on trolley line or railroad needing new construction

Major Clearing on Existing ROW – Length in miles of route on trolley line or railroad needing major clearing of trees and brush

Open ROW – Length in miles of route on trolley line or railroad that is presently clear

Total Trail Construction – Length in miles of route to be constructed

Traffic Signal Changes – Number of existing traffic signals needing changes for the trail

Warning Flashers – Number of new flashing warning signs needed for the trail

Signal Improvements – Total number of the two previous entries

Business Easements – Number of easements from businesses

Apartments / Association Easements – Number of easements from apartments or homeowners associations

Individual Easements – Number of easements from individual landowners

Total Easements – Number of easements

Initial Main Trail

Section	1.1	1.2	1.3	1.4	T1	2.1	T2	3.1	3.2	3.3	3.4	3.5	3.6	T3	4.1	4.2	4.3	T4	5.1	T5	Total
Length (miles)	1.40	1.92	1.23	1.33	5.88	0.94	0.94	1.32	1.05	1.37	0.85	0.88	1.63	7.10	1.22	0.96	2.05	4.23	2.53	2.53	20.68
On Road	0.95	1.92	0.19	0.56	3.62	0.41	0.41	0.00	0.41	0.00	0.24	0.00	0.41	1.06	0.81	0.05	0.74	1.60	0.00	0.00	6.64
Other Pavement	0.00	0.00	0.00	0.00	0	0.21	0.21	0.90	0.11	0.00	0.00	0.16	0.32	1.49	0.00	0.19	0.00	0.19	0.00	0.00	1.84
Total Paved	0.95	1.92	0.19	0.56	3.62	0.62	0.62	0.90	0.52	0.00	0.24	0.16	0.73	2.55	0.81	0.24	0.74	1.79	0.00	0.00	8.58
Spurs	0	1	1	0	2	1	1	1	1	2	2	1	1	8	0	1	1	2	2	2	15
Spurs with Construction	0	0	0	0	0	0	0	1	1	2	1	0	0	5	0	1	1	2	2	2	9
NewConstruction	0.45	0.00	0.00	0.10	0.55	0.00	0.00	0.42	0.21	0.25	0.00	0.08	0.08	1.04	0.00	0.00	0.00	0.00	0.00	0.00	1.59
Major Clearing on existing ROW	0.00	0.00	1.04	0.67	1.71	0.32	0.32	0.00	0.00	0.43	0.00	0.00	0.24	0.67	0.00	0.72	0.00	1.23	0.00	0.00	3.93
Open ROW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.69	0.61	0.64	0.58	2.84	0.41	0.00	1.31	0.76	2.53	2.53	6.13
Total trail construction	0.45	0.00	1.04	0.77	2.26	0.32	0.32	0.42	0.53	1.37	0.61	0.72	0.90	4.55	0.41	0.72	1.31	2.44	2.53	2.53	12.10
Traffic Signal Changes	1	1	0	0	2	1	1	1	0	0	0	0	0	1	0	0	1	1	0	0	5
Warning Flashers	0	0	1	0	1	0	0	1	1	2	1	0	0	5	0	0	1	1	1	1	8
Signal Improvements	1	1	1	0	3	1	1	2	1	2	1	0	0	5	0	0	0	1	1	1	13
Business Easements	1	0	0	2	3	5	5	9	1	3	0	3	1	17	0	5	2	7	1	1	33
Apartment / Association Easements	1	0	0	1	2	0	0	0	1	0	1	0	2	4	0	0	0	0	0	0	6
Individual Easements	0	0	1	0	1	0	0	0	0	0	2	0	1	3	2	4	0	6	0	0	10
Total Easements	2	0	1	3	6	5	5	9	2	3	3	3	4	24	2	9	2	13	1	1	49

Branches

Section	A3.1	AT3	A2.1	A2.2	A2.3	AT2	A6.1	AT6	A Total		S4.1	ST4	S7.1	ST7	S Total
Length (miles)	2.00	2.00	1.61	2.05	2.22	5.88	2.21	2.21	**10.09**		2.28	2.28	1.19	1.19	**3.47**
On Road	1.55	1.55	0.00	0.00	0.00	0.00	0.00	0.00	**1.55**		0.00	0.00	0.00	1.01	**1.01**
Other Pavement	0.00	0.00	0.14	0.00	0.00	0.14	0.00	0.00	**0.14**		0.00	0.00	0.05	0.05	**0.05**
Total Paved	1.55	1.55	0.14	0.00	0.00	0.14	0.00	0.00	**1.69**		0.00	0.00	0.00	0.00	**1.06**
Spurs	0	0	1	1	2	4	0	0	**4**		0	0	0	0	**0**
Spurs with construction	0	0	0	0	0	0	0	0	**0**		0	0	0	0	**0**
New Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0**		0.00	0.00	0.00	0.00	**0.00**
Major Clearing on existing ROW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0**		0.00	0.00	0.00	0.00	**0.00**
Open ROW	0.45	0.45	1.47	2.05	2.22	5.74	2.21	2.21	**8.40**		2.28	2.28	0.13	0.13	**3.41**
Total trail construction	0.45	0.45	1.47	2.05	2.22	5.74	2.21	2.21	**8.40**		2.28	2.28	0.13	0.13	**3.41**
Traffic Signal Changes	1	1	0	0	0	0	0	0	**1**		0	0	1	1	**1**
Warning Flashers	0	0	1	2	2	5	0	0	**5**		1	1	0	0	**1**
Signal Improvements	1	1	1	2	2	5	0	0	**6**		1	1	1	1	**2**
Business Easements	1	1	2	0	0	2	1	1	**4**		1	1	1	1	**2**
Apartment / Association Easements	0	0	0	0	0	0	0	0	**0**		0	0	0	0	**0**
Individual Easements	0	0	0	0	0	0	0	0	**0**		0	0	0	0	**0**
Total Easements	1	1	2	0	0	2	1	0	**4**		1	1	1	1	**2**

Long Term Main Trail

Section	1.1	1.2	1.3	1.4	T1	2.1	T2	3.1	3.2	3.3	3.4	3.5	3.6	T3	4.1	4.2	4.3	T4	5.1	T5	Total
Length (miles)	1.40	**1.02**	1.23	1.33	**4.98**	**0.88**	**0.88**	1.32	1.05	1.37	0.85	0.88	**1.05**	**6.52**	**1.19**	0.96	2.05	**4.20**	2.53	2.53	**19.11**
On Road	0.95	**0.20**	0.19	0.56	**1.90**	0.41	0.41	0.00	0.41	0.00	0.24	0.00	**0.10**	**0.75**	**0.39**	0.05	0.74	**1.18**	0.00	0.00	**4.24**
Other Pavement	0.00	**0.08**	0.00	0.00	**0.08**	**0.15**	**0.15**	0.90	0.11	0.00	0.00	0.16	**0.15**	**1.32**	0.00	0.19	0.00	0.19	0.00	0.00	**1.74**
Total Paved	0.95	0.28	0.19	0.56	**1.98**	**0.56**	**0.56**	0.90	0.52	0.00	0.24	0.16	**0.25**	**2.07**	**0.61**	0.24	0.74	**1.37**	0.00	0.00	**5.98**
Spurs	0	1	1	0	2	1	1	1	1	2	2	1	1	8	0	1	1	2	2	2	**15**
Spurs with Construction	0	0	0	0	0	0	0	1	1	2	1	0	0	5	0	1	1	2	2	2	**9**
New Construction	0.45	**0.21**	0.00	0.10	**0.76**	0.00	0.00	0.42	0.21	0.25	0.00	0.08	0.08	1.04	**0.19**	0.00	0.00	**0.19**	0.00	0.00	**1.99**
Major Clearing on existing ROW	0.00	0.00	1.04	0.67	1.71	0.32	0.32	0.00	0.00	0.43	0.00	0.00	0.24	0.67	0.00	0.72	0.00	0.72	0.00	0.00	**3.42**
Open ROW	0.00	**0.53**	0.00	0.00	**0.53**	0.00	0.00	0.00	0.32	0.69	0.61	0.64	**0.48**	**2.74**	**0.61**	0.00	1.31	**1.92**	2.53	2.53	**7.72**
Total trail construction	0.45	**0.74**	1.04	0.77	**3.00**	0.32	0.32	0.42	0.53	1.37	0.61	0.72	**0.80**	**4.45**	**0.80**	0.72	1.31	**2.83**	2.53	2.53	**13.13**
Traffic Signal Changes	1	**0**	0	0	**1**	1	1	1	0	0	0	0	0	1	0	0	1	1	0	0	**5**
Warning Flashers	0	**1**	1	0	**2**	0	0	1	1	2	1	0	0	5	0	0	1	1	1	1	**8**
Signal Improvements	1	1	1	0	3	1	1	2	1	2	1	0	0	5	0	0	0	1	1	1	**13**
Business Easements	1	**2**	0	2	**4**	5	5	9	1	3	0	3	**3**	**19**	0	5	2	7	1	1	**33**
Apartment / Association Easements	1	**1**	0	1	**3**	0	0	0	1	0	1	0	2	4	0	0	0	0	0	0	**6**
Individual Easements	0	**7**	1	0	**8**	0	0	0	0	0	2	0	1	3	2	4	0	6	0	0	**10**
Total Easements	2	**10**	1	3	**16**	5	5	9	2	3	3	3	4	**26**	2	9	2	13	1	1	**49**

Boston Worcester Air Line Trolley - Connections

Connectivity is critical to the development of the trail as major component of a non-motorized transportation network. Except for Framingham, there are no currently planned or built multi-use trails in the communities serviced by the trail, but there are a significant number of trails planned in neighboring communities. In addition, there are some potential off-road, as well as many on-road routes that could be developed as part of a network. The following is a description of regional trail plans and potential connections that could affect the BWALT trail.

Bike Plans

There are two major multi-use trail plans that currently drive much of the funding and construction at the state level, both of which are reflected on the regional overview map in this section. The older, broader plan, Commonwealth Connections [DEM2002], provides a plan for greenways throughout the state. The more recent, second plan, the Massachusetts Bicycle Transportation Plan [MDO2009], provides more detail than the 2002 plan by identifying existing and planned off-road and on-road bicycling links across the state. Regarding that plan and the towns connected by the proposed BWALT trail, however, only Framingham, with its planned rail trail, and Westborough, with an east-west bike link on Routes 135 and 30, are mentioned at all in the 2009 plan.

In addition to the two plans mentioned above, Rubel Bike Maps (RUB1999) are also a primary reference for on-road bike trail planning at the state level. Many of the on-road routes considered in the BWALT trail plan were derived from the Rubel Bike Maps.

Regionally, both the Central Massachusetts Regional Planning Commission (CMRPC) and the Metropolitan Area Planning Council (MAPC) have recently issued trail plans [CMR2011] [MAP2007] that cover the communities in question. Unfortunately these plans do not do a good job of distinguishing between hiking and biking trails. In addition, the CMRPC plan is primarily based on twelve-year-old input, with some of that data incorrectly brought forward. Finally, there is an older study [DEM1993] by the Department of Environmental Management that looks at the MAPC region.

Multi-use Trails

The following is a list of the existing and proposed multi-use trails in the region.

Assabet River Rail Trail – The Assabet River Rail Trail (ARRT) http://arrtinc.org/ is a secondary route in the state plan. The trail goes from Marlborough through Hudson to Acton, crossing the Mass Central Corridor in Hudson. The trail currently is completed from Marlborough through Hudson to the Stow town line.

Blackstone River Bikeway - Blackstone River Bikeway http://www.blackstoneriverbikeway.com/ is one of the main corridors of the state's bike plan. Long-term the Blackstone River Bikeway will connect Worcester to Providence, RI. The challenge here is to provide a connection to this major route from BWALT.

Bruce Freeman Rail Trail – The Bruce Freeman Rail Trail http://brucefreemanrailtrail.org/ is the planned eastern terminus of the BWALT trail. The Bruce Freeman trail is planned to go from Chelmsford to Framingham with a possible extension into Lowell.

Cochituate Rail Trail – The Cochituate Rail Trail http://crtrail.org/ goes through Framingham and Natick. There is a proposed connection to the Bruce Freeman Rail Trail via a proposed trail on the Hultman Aqueduct. The connection to the Bruce Freeman offers BWALT a route further east.

Mass Central Corridor – The Mass Central Corridor http://masscentralrailtrail.org/ is the main east-west trail of the state's plan. This includes the active trail efforts by Wachusett Greenways http://www.wachusettgreenways.org. Locally, the corridor will pass through Berlin, Hudson and Sudbury. We will have a connection via the Bruce Freeman Rail Trail. We have potential additional connections, via the branch to Berlin, and through connecting to the Assabet River Rail Trail in Marlborough.

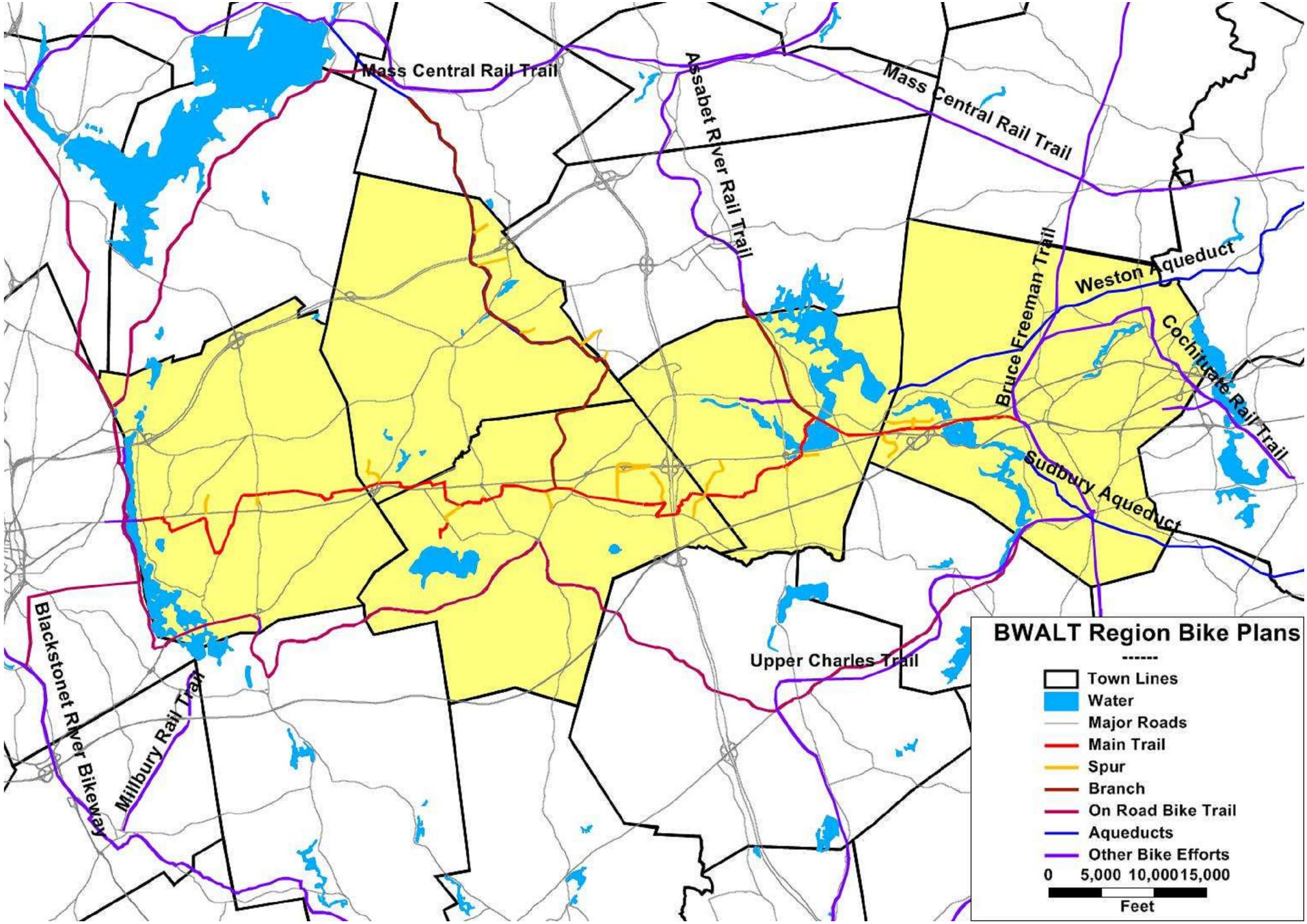
Upper Charles Trail – The Upper Charles Trail http://uppercharlestrail.org/ is a proposed loop trail through a number of communities including Hopkinton and Framingham are. At present the trail is constructed in Milford. Links from BWALT to the trail should be explored from Westborough and Southborough into Hopkinton, and in Framingham.

National Routes

There is at present an effort to identify national bicycling routes [ACA2005]. There are two such routes that pass through our region.

East Coast Greenway – The East Coast Greenway http://www.greenway.org/index.shtml is a trail from Fort Kent, ME to Key West, FL. There is a potential for the greenway to use the BWALT.

Atlantic Coast Bicycle Route – The Atlantic Coast Bicycle Route http://www.adventurecycling.org/routes/atlanticcoast.cfm is a trail from Bar Harbor, ME to Key West, FL. This is an on the road route, and at present passes through Northborough and Westborough.


Mass Central Rail Trail
Assabet River Rail Trail
Mass Central Rail Trail
Bruce Freeman Trail
Weston Aqueduct
Cochituate Rail Trail
Sudbury Aqueduct
Upper Charles Trail
Blackstonet River Bikeway
Millbury Rail Trail
BWALT Region Bike Plans
Town Lines
Water
Major Roads
Main Trail
Spur
Branch
On Road Bike Trail
Aqueducts
Other Bike Efforts
0 5,000 10,000 15,000
Feet

References

Bibliography

ACA2005 US Bicycle Route Corridor Plan http://atfiles.org/files/pdf/usbrcorridorplan.pdf

Alt2009 Cycle Tracks: Lessons Learned http://www.altaplanning.com/App_Content/files/pres_stud_docs/Cycle%20Track%20lessons%20learned.pdf

CMR2005 CMRPC Route 9 East (Shrewsbury-Westborough) Corridor Profile
http://www.cmrpc.org/sites/default/files/Documents/Trans/Study_and_Plan/CorridorProfile/Route%209%20Corridor%20Profile_Final.pdf

CMR2010 CMRPC Route 9 Development and Traffic Analysis
http://www.cmrpc.org/sites/default/files/Documents/CDAP/Route%209%20Transportation%20Analysis_FINAL_2.pdf

CMR2011 CMRPC Regional Bike and Pedestrian Plan
http://www.cmrpc.org/sites/default/files/Documents/Trans/CMMPO%20Bicycle%20and%20Pedestrian%20Plan%20-%20FINAL%205.12.2011.pdf

CMR2013 CMRPC, Boston Worcester Air Line Trail: Route Planning
http://www.cmrpc.org/ongoing-studies-and-plans-0

Cum1975 Trolleys Along the Turnpike by O. R. Cummings

DEM1993 A Survey of Bicycle Transportation Routes in the Boston Metrowest Area http://tdc-www.cfa.harvard.edu/mink/bike/bikeways/metrowest/

DEM2002 Commonwealth Connections http://www.mass.gov/dcr/stewardship/greenway/pdfs/connections.pdf

FTA2002 Rails-with-Trails: Lessons Learned http://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/index.cfm

FTA2004 Characteristics of Emerging Road Users and Their Safety http://www.fhwa.dot.gov/publications/research/safety/04103/04103.pdf

Hil1960 The Electric Interurban Railways in America, by George W Hilton and John F. Due

Kar1995 The Rail Lines of Southern New England

MAD2012 MassDOT Interstate 495/Route 9 Interchange Improvement Study
http://www.massdot.state.ma.us/planning/Main/CurrentStudies/I495Route9InterchangeStudy.aspx

MAP2007 MAPC Regional Bicycle Plan http://www.mapc.org/sites/default/files/Regional_Bicycle_Plan_-_2007.pdf

MAP2011 MAPC Route 9 Corridor Analysis http://mapc.org/sites/default/files/Route%209_final.pdf

MAP2012a MAPC 2012 Greater Boston Cycling & Walking Map
http://www.mapc.org/sites/default/files/images/smartgrowth/transportation/MAPCcyclewalkmap.pdf

MAP2012b MAPC 2012 Trail Implementation Toolkit http://mapc.org/resources/trail-implementation

MAP2013 MAPC Route 9 Metro West Smart Growth Plan http://www.mapc.org/route-9

MDO2006 MassDOT Project Development & Design Guide http://www.mhd.state.ma.us/default.asp?pgid=content/designGuide&sid=about

MDO2008 MassDOT Bicycle Transportation Plan http://www.massdot.state.ma.us/portals/0/docs/bike/bikeplan2008.pdf

MWR2012 Route 9 MetroWest Smart Growth Plan http://mapc.org/sites/default/files/Route%209_Smart%20Growth%20Plan_Final_0.pdf

NAC2011 NACTO Urban Bikeway Design Guide http://nacto.org/wp-content/uploads/2011/03/NACTO_UrbanBikeway_DesignGuide_MRez.pdf

RTC2013 Rails to Trails Community Built Report
http://www.railstotrails.org/resources/flipbooks/2012_communityreport/2012_communityreport/assets/basic-html/page1.html

RTC2013a America's Rails-with-Trails http://community.railstotrails.org/media/p/38186.aspx

Rub1998 Rubel Central Massachusetts Bicycle and Road Map
Rub2001 Rubel Eastern Massachusetts Bicycle Map
USC2013 US Census Bureau Commuting Worker Flow https://www.census.gov/hhes/commuting/data/commutingflows.html

Recommended Reading

Bruce Freeman Rail Trail—Trail Studies http://brucefreemanrailtrail.org/trail_plans/rail_trail_studies.html
This is a compilation of a large number of trails studies covering all aspects of multi-use trails.

Trails for the Twenty-First Century 2nd Edition by Charles A. Flink, Kristinen Olka and Robert M. Searns
Described as a *Planning, Design and Management Manual for Multi-use Trails,* this book is one of the best guides to creating trails available.

Rails to Trails Conservancy Website http://www.railstotrails.org/index.html
This site is the central collection point for rail-trail information in the country.

Boston and Worcester Private Right of Way 1908

Nothing compares with the simple pleasure of a bike ride. – John F. Kennedy